

Read through the entire PACE text; then open your Activity Pac to page A and begin the activities.

## Goals

To learn about:

### The Blue Planet

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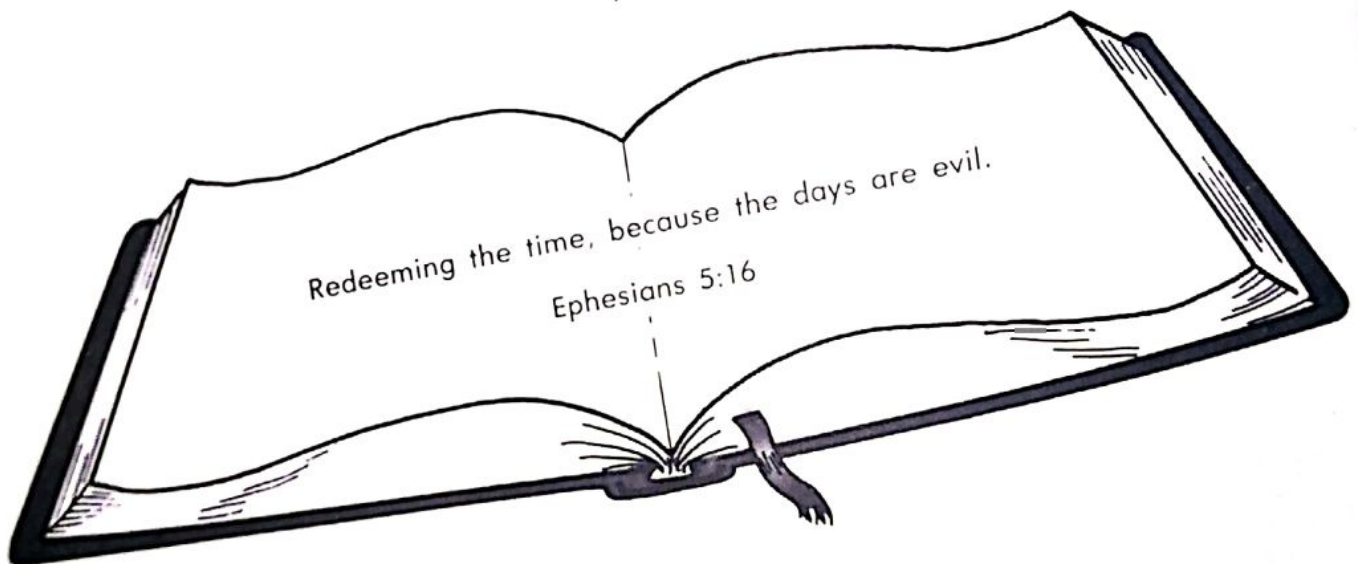
### Efficient

There's a certain delight in  
doing things right . . .  
In the best way they can be done.  
This is called Efficiency.  
Do things right and you will see  
A personal battle you have won.

To learn to accomplish the greatest productivity by preparing myself and my environment—to be efficient

To memorize and say Ephesians 5:16

### Scripture Verse

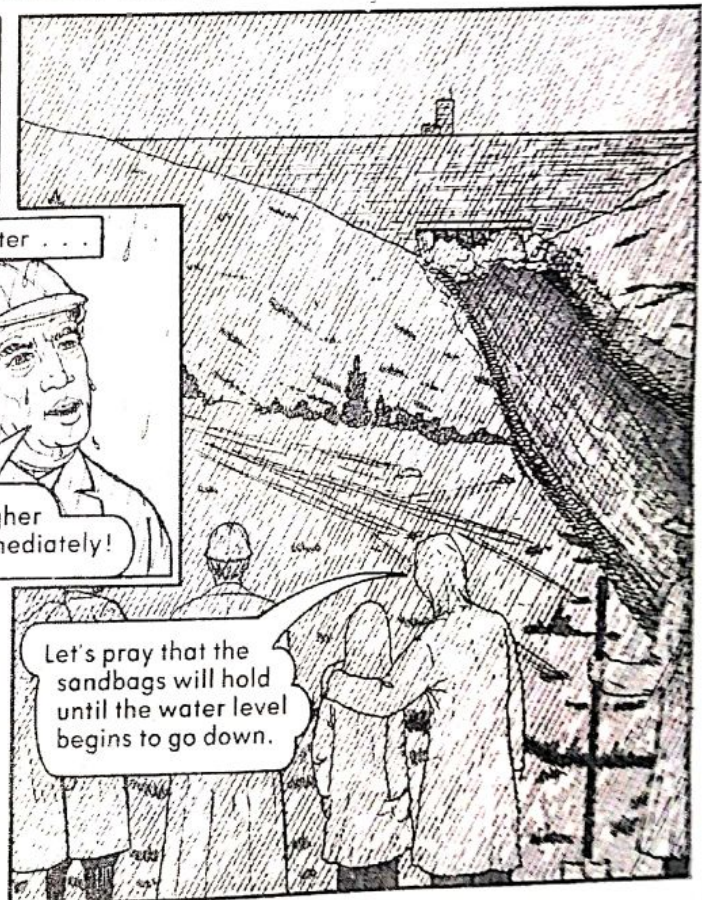
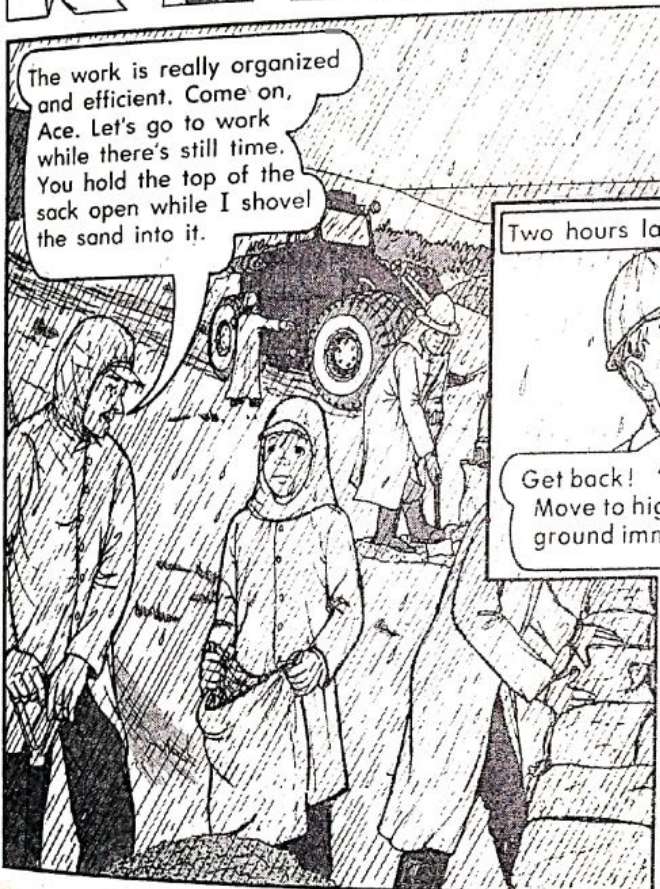
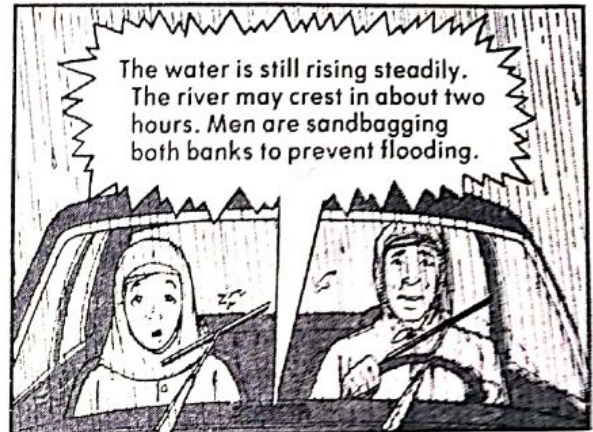
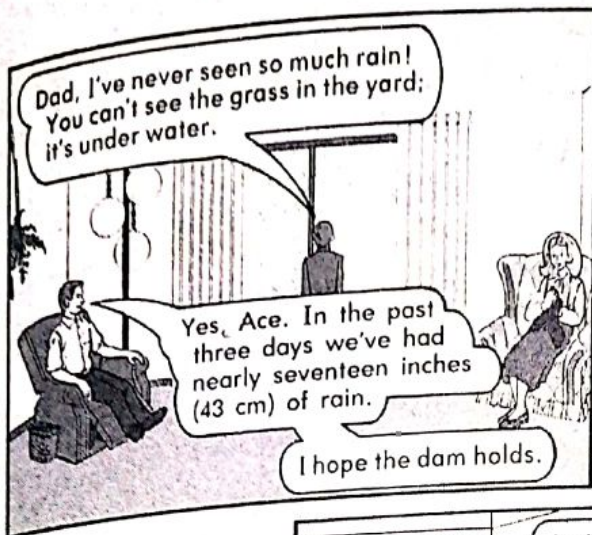


### Symbol and Sound Chart

ā = glad	ī = sit	ōō = tool	oi = coin	zh = Asia
ā = save	ī = kind	ū = cup	ou = out	e = a in above
ā = fair	ō = box	ū = use	sh = she	e = e in the
o = barn	ō = go	ch = much	th = this, thin	e = i in easily
e = best	ō = soft, order	kw = queen	ūr = burn	e = o in lemon
ē = bee	ōō = look	ng = song	z = has	e = u in Jesus

1 (one)







## New Vocabulary for Section One

<u>Word</u>	<u>Pronunciation</u>	<u>Definition</u>
absence n.	əb'sens	a being without; a lack
basin n.	bā'sən	all the land drained by a river and the streams that flow into that river
crimson n.	krim'zən	a deep red color
expanse n.	ik-spāns'	a large, open space
fictional adj.	fik'shən-əl	unreal or false; made up or imagined
flaky adj.	flā'kī	having the quality of breaking easily into small bits
frost n.	frōst	feathery ice crystals formed when water vapor condenses at below-freezing temperatures
hexagon n.	hēk'se-gōn'	a six-sided shape
hurl v.	hūrl	to throw with force
hydrosphere n.	hī'dre-sfir'	the water on Earth's surface and in its atmosphere
hymn n.	hīm	a song of praise to God
pellet n.	pēl'it	a little ball
ridge n.	rīj	a long, narrow line of hills or mountains
soup n.	sōop	a liquid food often containing meat and vegetables
spill v.	spil	to flow out of, or run over the top of, a container
stain n.	stān	a dark spot or discoloration
teakettle n.	tē'kēt'el	a container with a spout, used for heating water
updraft n.	ūp'drāft'	an upward movement of air or wind
violent adj.	vī'e-lent	done with strong force; wild

### The Blue Planet

"Dad, these floodwaters must resemble on a small scale the Flood of Noah's day," said Ace. "Where will these floodwaters go?"

"After the floodwaters leave the city, some of the water will spill out of Peaceful River and

flood the countryside," Dad replied. "Much of the water will remain in the river channel until the river empties into the ocean many miles (km) downstream. Peaceful River is just one part of the hydrosphere."

## Section One

### I. Structure of the Hydrosphere

"What's the hydrosphere, Dad?" asked Ace.

"Well, the hydrosphere is all Earth's waters," Dad explained. "'Hydro' means 'water,' and 'sphere' means 'the place where something exists.' Just as the atmosphere is the air surrounding our Earth, the hydrosphere is the water on Earth's surface and in its atmosphere."

"Dad, you said that Peaceful River is just one part of the hydrosphere," stated Ace. "What are the other parts?"

"The hydrosphere can be considered two different ways," Dad replied. "First, we can consider areas. The areas of the hydrosphere are the oceans, seas, lakes, and rivers. Second, we can consider different types of waters. Some waters are salty, while others are fresh. Some waters are frozen, while others are liquid or vapor."

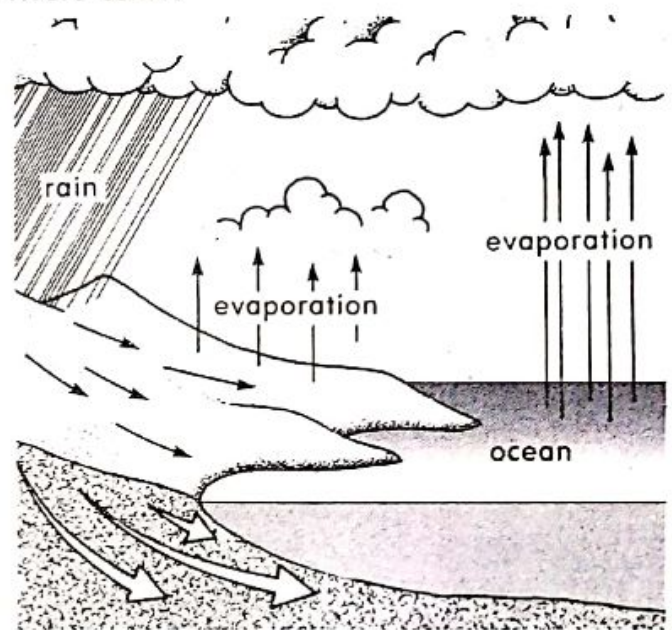


On the way home, Ace commented, "Dad, all the rivers run into the oceans, but the oceans' water level never rises as our river did. Why don't the oceans flood the continents

when the rivers empty all that water into the oceans?"

#### A. The Hydrologic Cycle

"God designed the hydrologic, or water, cycle to prevent the oceans from overflowing," Dad answered. "The hydrologic cycle is the natural movement of water over our Earth from one place to another, and the change of that water from one form of matter to another. 'Hydro,' of course, means 'water,' and 'logic' describes the order of events in the cycle that has been going on since the Flood occurred. Ecclesiastes 1:7 states, 'All the rivers run into the sea; yet the sea is not full; unto the place from whence the rivers come, thither they return again.' This verse describes the hydrologic cycle. Rivers flow to the sea and then back 'unto the place from whence the rivers come.'"



Hydrologic cycle

"A cycle is a repeating system in which the end of the system becomes the beginning when the cycle repeats. Three processes working together compose the hydrologic cycle—evaporation, condensation, and precipitation—none of which is first, second, or third.

"Think of a circle. No one part of it is first,

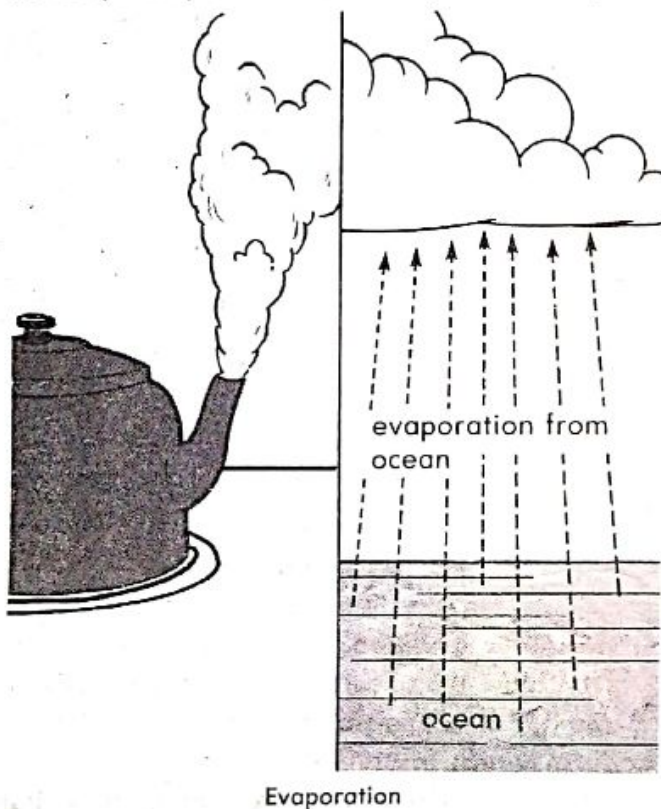


second, or third. Any point on it could be the beginning or the end, and as you draw a circle, the beginning becomes the end. Just as a circle never ends, a cycle is a never-ending process."

Just then, Dad and Ace arrived back home. Mom met them at the door and said, "You two must be tired and hungry. Come into the kitchen, and I'll fix your breakfast."

As Dad and Ace sat down at the kitchen table, the teakettle on the stove began to whistle. "Look at the steam coming from the teakettle's spout, Ace," Dad said. "Steam is water changing quickly from its liquid state into gas, or vapor."

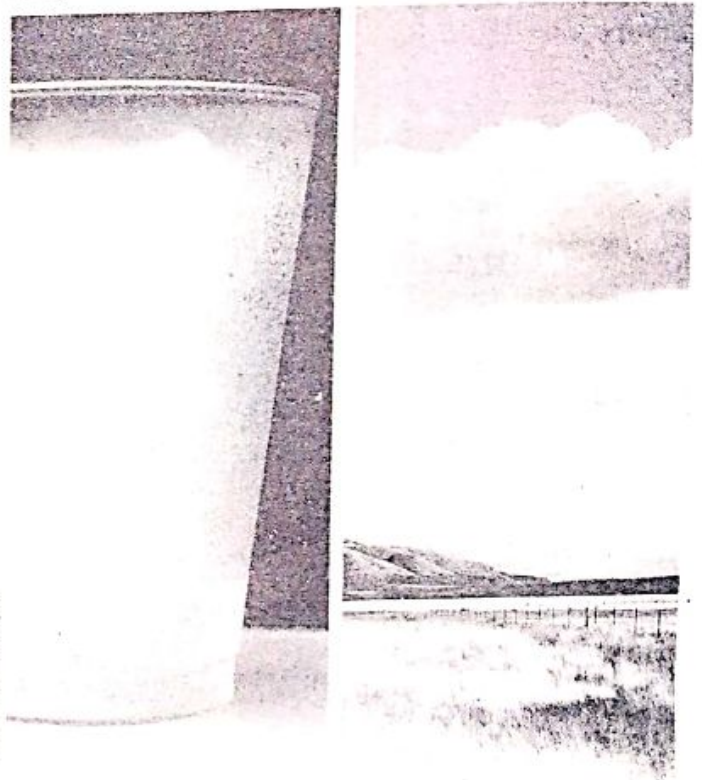
"The process by which water changes from a liquid to a vapor is called 'evaporation.' The word evaporation, formed from the prefix 'e-' meaning 'completely' and the root 'vapor' meaning 'gas,' means 'the process of becoming gas completely.' During evaporation, the first process of the hydrologic cycle that we'll consider, water molecules rise from the liquid surface to form vapor in the air. You have seen the results of evaporation many times. Water in soup evaporates from a pan of soup left



uncovered on a warm stove. In the atmosphere, the sun's heat acts like the warm stove and causes water to turn into vapor. Millions of gallons (liters) of water evaporate from rivers, lakes, seas, and oceans every day. Water may also evaporate directly from the ground or rain directly upon the ocean, thus shortening the cycle. This water vapor remains in the air, though you cannot see it.

"Now I want to illustrate condensation, the second process of the hydrologic cycle that we'll consider," said Dad as he arose from the table and took a glass from the cabinet. He put some ice cubes into the glass and filled it with water. "Notice what happens to the outside of the glass."

"Water droplets are beginning to form on the outside of the glass," said Ace. "Do these droplets come from water vapor in the air?"



Condensation

Clouds

"Yes," replied Dad. "In a similar manner, water vapor in the atmosphere rises into the cooler altitudes, cools, and condenses into water droplets just as the water vapor did on the side of this cool glass. In the word 'condensation,' the prefix 'con-' means 'with' or



### TREASURES OF THE SNOW

Scientists have known for years that snowflakes are shaped in six-sided, or hexagonal, patterns. But why is this? Some scientists have theorized that the electrons within a water molecule follow three orbital paths that are positioned at 60° angles to one another. Since a circle contains 360°, this electronic relationship causes the water molecule to have six "spokes" radiating from a hub (the nucleus). When water vapor freezes in the air, many water molecules link up to form the distinctive six-sided snowflakes and the hexagonal pattern is quite evident.

Snowflakes also contain small air pockets between their spokes. These air pockets have a higher oxygen content than does normal air. Magnetism has a stronger attraction for oxygen than for other gases. Consequently, some scientists have concluded that a relationship exists between a snowflake's attraction to oxygen and magnetism's attraction to oxygen.

Job 38:22, 23 states, "Hast thou entered into the treasures of the snow? or hast thou seen the treasures of the hail, Which I have reserved against the time of trouble, against the day of battle and war?" Considering this Scripture, some scientists believe that a tremendous power resides untapped within the water molecules from which snowflakes and hailstones are made.

How can this Scripture, along with these observations about snowflakes, show us a physical truth? Scientists at Virginia Tech have produced electricity more efficiently from permanent magnets, which have their lines of force related to each other at sixty-degree angles, than from previous methods of extracting electricity from magnetism. Other research along this line may reveal a way to tap electric current directly from snow, eliminating the need for costly, heavy, and complex equipment now needed to generate electricity.

'together,' and the root 'dense' means 'closer together.' Condensation occurs when water vapor molecules cool. As they lose heat energy, they join together to become water droplets. Clouds are masses of water droplets formed from water vapor that has condensed in the atmosphere."

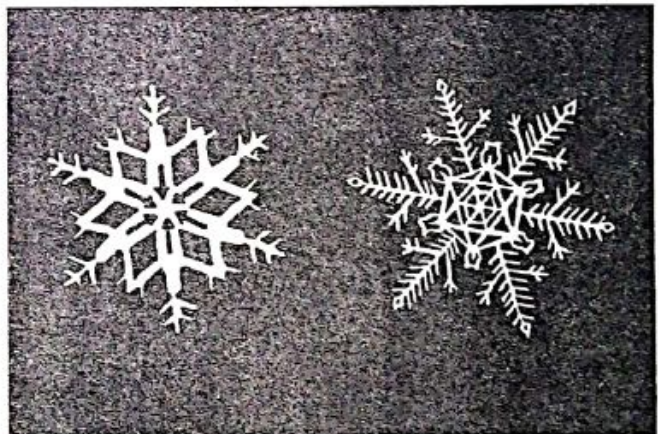
"I know what happens after clouds are formed!" exclaimed Ace. "We often have rain, just as we are having here."

"You are right," Dad said. "When condensed droplets, which form the clouds, join together and become heavy, the droplets fall as rain. When water falls from the sky, it is called 'precipitation.' The word precipitation is formed from the prefix 'pre-' meaning 'before' or 'first,' and 'cipit' meaning 'head.' Together, the parts mean 'headfirst' or 'to fall down quickly.'"

"If the temperature is below freezing when the moisture condenses in the atmosphere, the droplets freeze into crystals called

'snowflakes.' Snow falling through air that is well below freezing is very flaky and powdery and is known as 'dry snow.' Snow falling through warmer air melts slightly and is called 'wet snow.' Wet snow packs together easily.

"When water freezes into crystals, the water molecules connect themselves into a pattern of hexagons. Thus, all snowflakes are hexagons.



Snowflakes

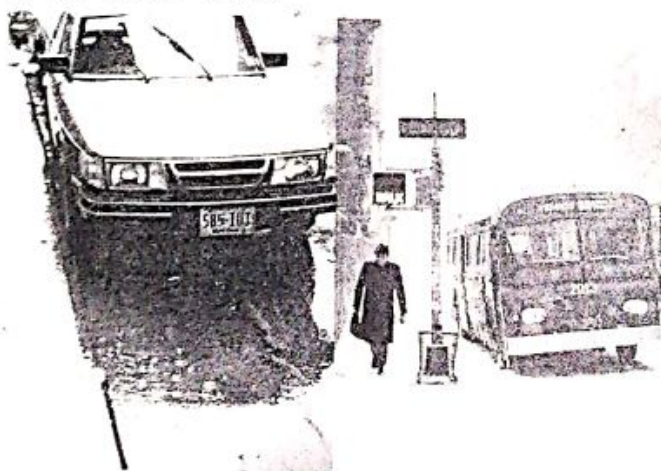


If you use a strong magnifying glass to examine snowflakes, you will be able to look at them all day long without finding any two of them exactly alike. God, the Great Designer, has designed each snowflake beautiful and unique."

"Dad, that reminds me of the hymn that says our sins were like crimson, but Christ has washed them whiter than snow."

"Yes, Ace, the Bible uses snow to picture a life cleansed from sin. Isaiah 1:18 states, 'Come now, and let us reason together, saith the LORD: though your sins be as scarlet, they shall be as white as snow; though they be red like crimson, they shall be as wool.' When King David cried out to the Lord to forgive him for sin, he said, 'Purge me with hyssop, and I shall be clean: wash me, and I shall be whiter than snow' (Psalm 51:7).

"Instead of forming snow, condensed moisture may be warm enough to form rain. Sometimes rain falls through a layer of cold air on its way to the ground and forms tiny pellets of ice called 'sleet.'"

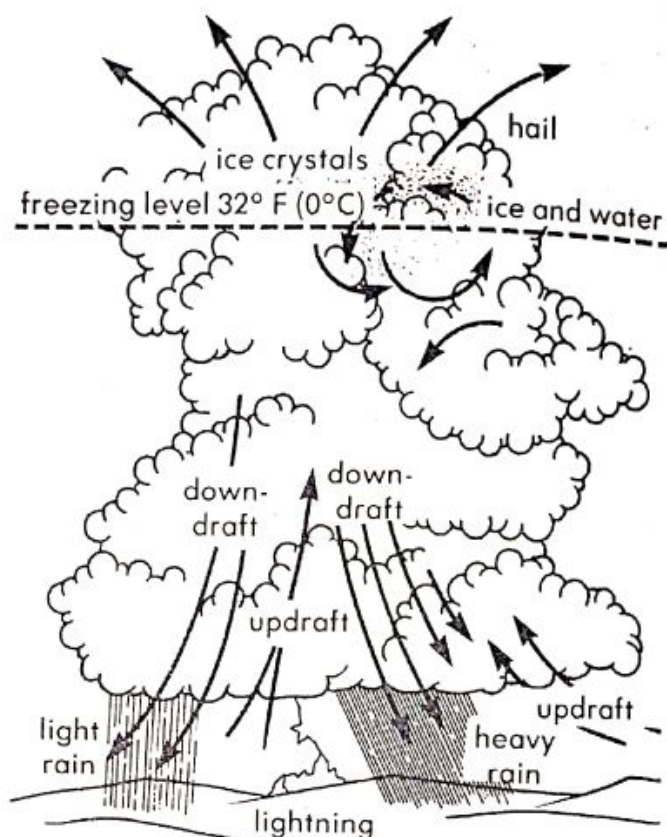


Rain

Snow

"Dad, what is the difference between sleet and hail?" asked Ace.

"Hail is often formed during violent updrafts of warm, moist air," answered Mr. Virtueson. "Usually, a hailstorm occurs at the same time as a thunderstorm because thunderstorms are also caused by violent updrafts of warm, moist air. Moisture in these updrafts forms high cumulus clouds called 'thunderheads.'"



Updrafts and downdrafts in a thunderhead

"As warm air rushes upward in the middle of a thunderhead, cold air is thrust downward around the outer edges of the updraft. Sometimes, air rises so high in the thunderheads and cools so much that the water droplets freeze to form sleet. Then, the sleet pellets begin to fall. On their way down, they either melt or are hurled up again by the updraft into the cold upper-cloud area. As more water freezes on each tiny sleet pellet, it

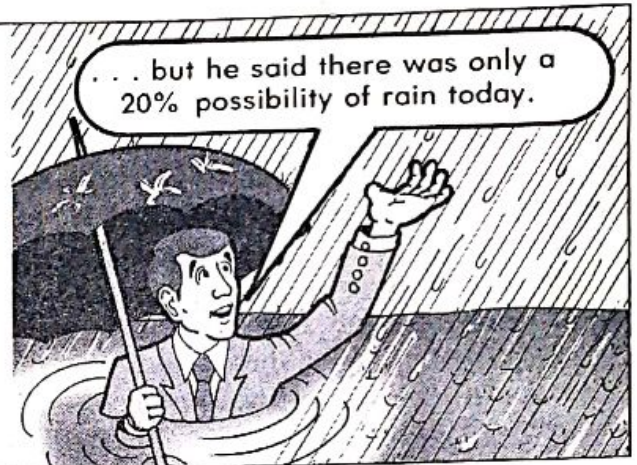


Hailstones



### FACTS FROM SCIENCE

The heaviest rainfall in the world was recorded at Cherrapunji (chĕr'ə-pŭn'jĭ), India, where 1,041 inches (2,644 cm) of rain fell between August, 1860, and July, 1861. The heaviest rainfall for a 24-hour period was 73.62 inches (187 cm) at Ciloas (sĭ-lō'ās), on the island of Reunion in the Indian Ocean on March 15-16, 1952.



grows larger and heavier, becoming a hailstone. A hailstone may rise and fall four or five times within the cloud before it becomes heavy enough to overcome the updraft and fall to Earth. The more powerful the updrafts, the larger the hailstones that are formed. When they fall, hailstones often damage crops, buildings, and cars."

"I see what you mean, Dad. I read that over 240 people in India died as a result of a hailstorm in 1888!"

"Yes, Ace, although sleet pellets are small, hailstones may be larger than golf balls. In Coffeyville (kōf'ĭ-vĭl), Kansas, in 1970, a hailstone fell that measured 7.5 inches (19 cm) in diameter and weighed over 1.5 pounds (0.7 kg)!"

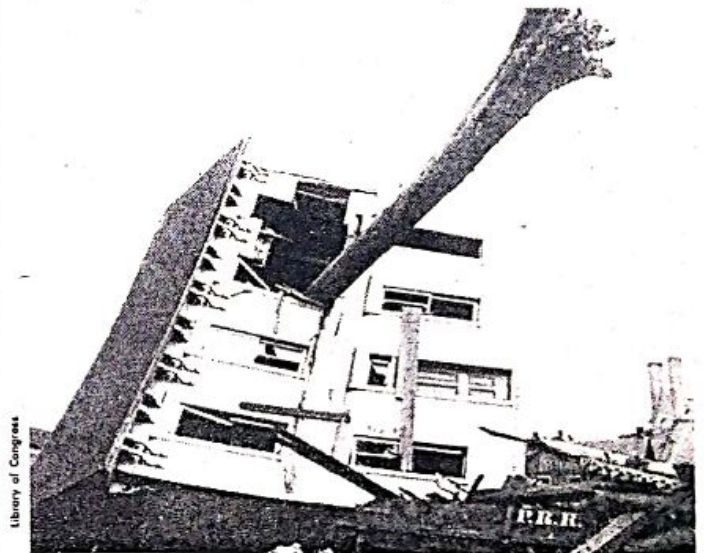
"Sometimes the ground is covered with frost when we wake up in the morning, but frost doesn't fall like snow, sleet, or hail, does it?" asked Ace.

"No," answered Dad. "Frost forms when moisture in the air condenses on cold grass, ground, or other objects, such as lawn chairs or cars. Do you remember all the mornings in the fall and winter when we had to scrape the frost off the car windows before I could drive you to school? If the temperature is above freezing, the condensed moisture is called 'dew.' If the temperature is below freezing, the condensed moisture freezes and is called 'frost.' When evaporated water condenses into clouds and precipitates upon the ground

to return to the ocean, the hydrologic cycle is complete.

"Temperature is very important to the hydrologic cycle, since heat from the sun speeds up evaporation. Also, clouds are able to hold more water when the atmosphere is warmer. Heavy droplets form and fall as rain when clouds cool.

"When rain continues to pour down heavily, rivers or lakes may overflow, resulting in floods. One of the most destructive floods in the history of the United States was the Johnstown (jōnz'toun') Flood. On May 31, 1889, the dam of a major Johnstown, Pennsylvania, reservoir, at that time the nation's largest earthen dam, weakened and burst after an unusually heavy rain. Twenty million tons of



Damage from the Johnstown Flood



water thundered over Johnstown and into the valleys below that city. The floodwaters drowned more than two thousand people, and almost a thousand people listed as missing were never found. Seventeen million dollars' worth of property damage was reported for the area.

"Even greater property damage occurred in 1972 when a storm from the tropics dumped heavy rains on the northeastern United States. Rivers in Pennsylvania and New York overflowed and destroyed or damaged about three billion dollars' worth of property. More than 15,000 people lost their homes during this flood."

"Even though local flooding does occur in some areas, I'm certainly glad God promised never again to destroy the entire Earth with water," said Ace.

"I am too, Ace. Though flooding reminds us of God's judgment, the Lord promises a flood of blessing to those who give to His service. Malachi 3:10 declares, 'Bring ye all the tithes into the storehouse, that there may be meat in

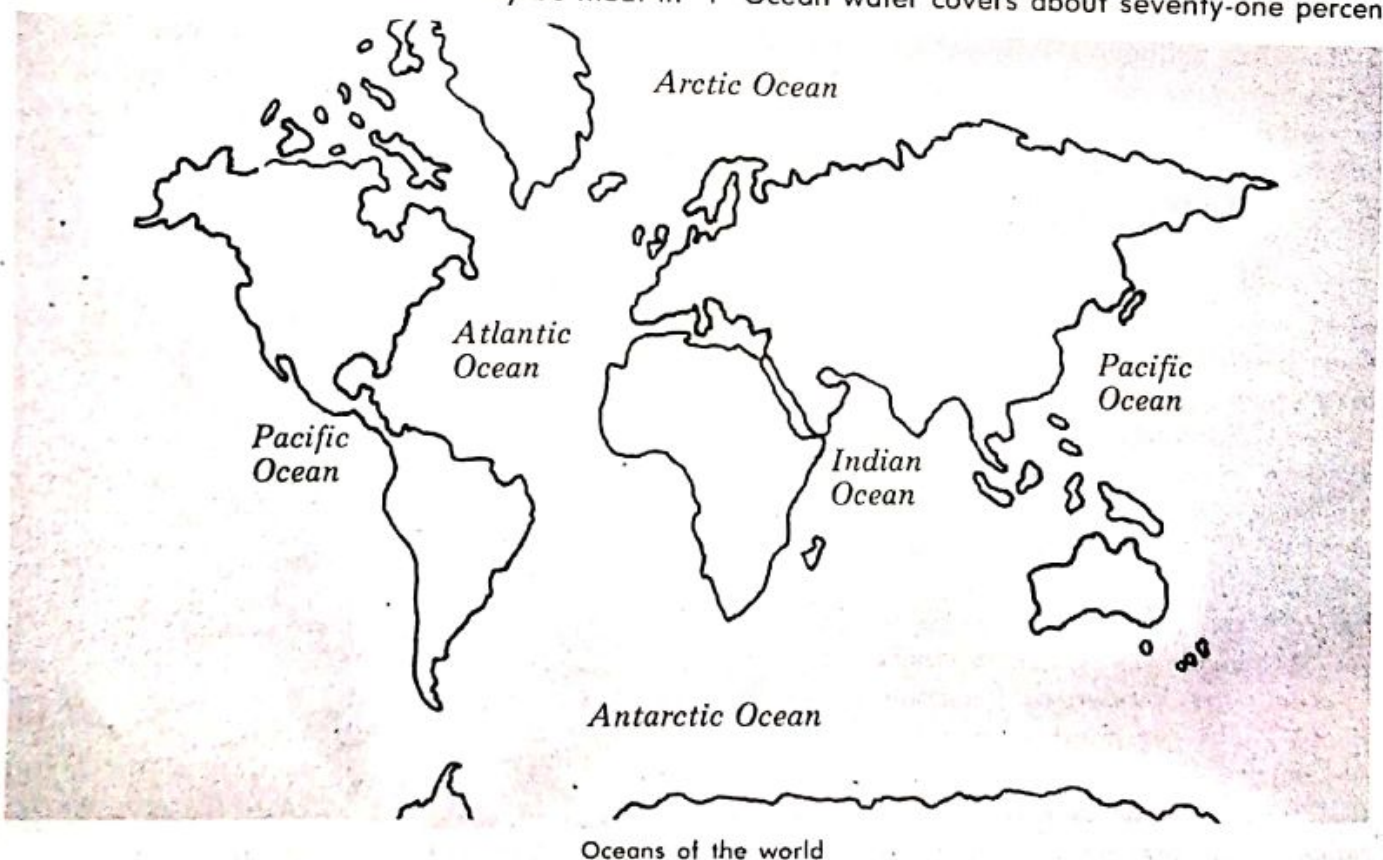
mine house, and prove me now herewith, saith the LORD of hosts, if I will not open you the windows of heaven, and pour you out a blessing, that there shall not be room enough to receive it.'

"In ancient times, men recognized the hydrologic cycle as one of the natural processes God had placed upon Earth for man's survival. 'He bindeth up the waters in his thick clouds; and the cloud is not rent under them' (Job 26:8). 'For he maketh small the drops of water: they pour down rain according to the vapour thereof: Which the clouds do drop and distil upon man abundantly' (Job 36:27, 28)."

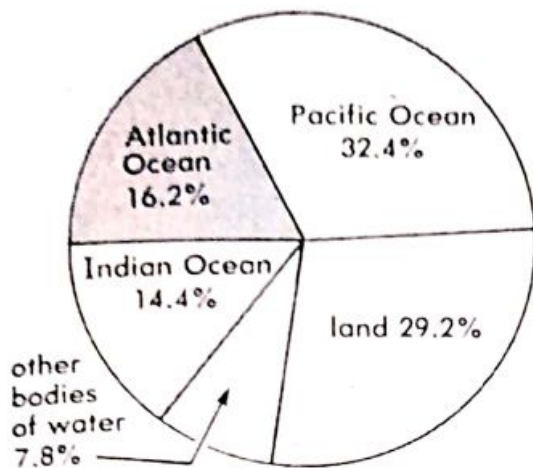
#### B. Areas of the Hydrosphere

"I think I remember the areas of Earth's hydrosphere," Ace interjected. "Oceans, seas, lakes, and rivers are the main bodies of water in Earth's hydrosphere. How many oceans are there, Dad?"

"Really, Ace, the different oceans are simply separate areas of the same body of water. Ocean water covers about seventy-one percent







Land and water on Earth

of Earth's surface. Each area of water that is called an 'ocean' is a very large expanse of salt water between continents. Earth's oceans, from largest to smallest, are the Pacific, Atlantic, Indian, Arctic, and Antarctic."

"Have you ever been on all the oceans, Dad?" asked Ace.

"No, I haven't, but I once read a fictional story about Mr. Philip Nolan (nō'lan), a young army officer who was disloyal to the United States," answered Dad. "At his trial, he carelessly said that he never wanted to hear of the United States again. Mr. Nolan was sentenced to be placed on a ship where he would never again be given news from, nor set foot in, the United States. From 1807 until his death in 1863, Mr. Nolan roamed the world's oceans. Many times he was sorry that he had spoken against his country, but he could not undo the results of his wrongdoing. According to the story, as Mr. Nolan lay dying, he marked some Scriptures in his Bible. One of them was Hebrews 11:16, 'But now they desire a better country, that is, an heavenly: wherefore God is not ashamed to be called their God: for he hath prepared for them a city.' Mr. Nolan, known in the story as 'the man without a country,' was able to sail into all the oceans of the world because they are connected, actually forming one large ocean.

"Sometimes oceans are incorrectly called

'seas.' An ocean is a large body of salt water surrounding a large body of land, but a sea is a large body of salt water wholly or partially surrounded by land.

"Sometimes, names of other bodies of water are inaccurate. A lake is usually an inland body of fresh water. However, some seas are called lakes, and some lakes are called seas. For example, because it is salty, the Great Salt Lake in the state of Utah should be called a sea, and the fresh water (not salty) Caspian (kās'pī·ən) Sea in Asia should be called a lake."



Caspian Sea

"The Caspian Sea is the largest lake in the world, having a total surface area of over 50,000 square miles (130,000 km<sup>2</sup>), enough surface area to cover the entire state of New York. Lake Superior (sə·pīr'ī·ər) has the largest surface area of any lake in the United States or Canada—over 31,000 square miles (80,000 km<sup>2</sup>). The Lost Sea, having a surface area of 4½ acres (1.8 hectares), much less than a square mile (2.6 km<sup>2</sup>), is probably the world's largest underground lake. Discovered in 1905, it lies 300 feet (90 m) underground in the Craighead (krāg'hēd') Caverns near Sweetwater (swēt'wō'tər), Tennessee.



"Some lakes have more than one name. The lake in Galilee, a large inland body of fresh water, has at least three different names. Lake Galilee is also called the 'Sea of Galilee' or the 'Lake of Tiberias' (ti-bir'i-ees). Lake Galilee is full of fish because water is constantly flowing into and out of the lake. However, the Dead Sea, downriver from Lake Galilee, has no life in it. Even though fresh water constantly flows into the Dead Sea, none flows out because the sea has no outlet. Also, as a result of the high temperature of the area, water rapidly evaporates, leaving behind salt and minerals. Over the years, the Dead Sea water has become so loaded with salt that nothing but bacteria can live in it."



Sea of Galilee

"The abundance of life in the flowing waters of Lake Galilee, as opposed to the absence of life in the Dead Sea, illustrates an important spiritual principle. For our lives to be abundant, we must allow God's Word to flow into our lives daily. However, we must also allow what we learn to flow out to help others. Christians who do not put Biblical principles into action in their own lives and who do not share Christ with others demonstrate that 'faith without works is dead' (James 2:20b)."

"Dad, into what ocean does Peaceful River empty?" asked Ace.

"Peaceful River empties into another river, Ace," answered Dad. "Afterwards, that larger river empties into the Atlantic Ocean."

"Rivers are an important part of the hydrologic cycle. They are mighty forces as they pour into the world's oceans, seas, and gulfs," Dad explained. "The two longest rivers in the world are the Amazon in South America and the Nile in Africa. Each of these rivers is about 4,000 miles (6,400 km) long. The Amazon empties into the Atlantic Ocean, while the Nile empties into the Mediterranean Sea. As you know, the longest river in the United States, the Mississippi, about 2,400 miles (3,900 km) long, empties into the Gulf of Mexico."

"I read about Dr. David Livingstone, a missionary from Scotland, who explored the continent of Africa searching for the source of the Nile," related Ace. "He was the first European to see Victoria Falls near Lake Victoria, a main source of the Nile. Victoria Falls is one of the tallest and most beautiful waterfalls in the world. Dr. Livingstone, later weakened by his explorations, died in Africa in 1873. Because he had loved Africa so much, national Christians removed his heart and buried it in Africa but returned his body to England for burial."



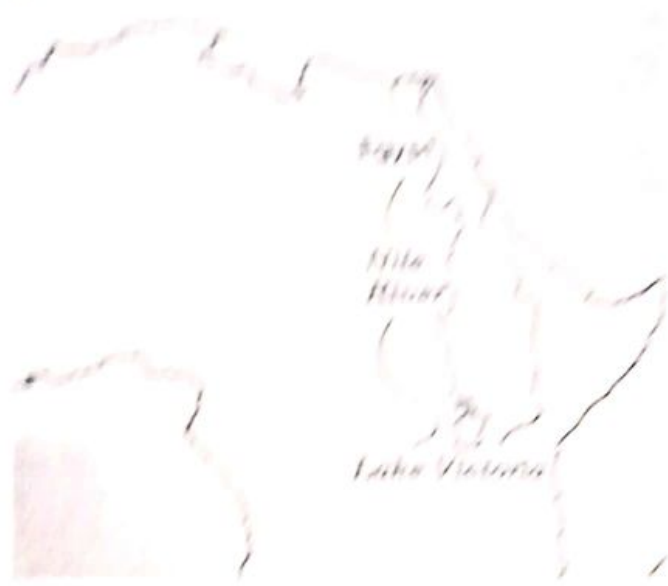
Victoria Falls



but we have to not miss golden opportunities  
we have time, and love



*Chlorophyll a*

[illegible]

British Association of Teachers

[illegible]

"Business the Mississippi River is west of the high mountain ridge known as the Continental Divide, the Mississippi drains through the Gulf of Mexico into the Atlantic Ocean. Any drainage basin west of the Continental Divide drains into the Pacific Ocean."

"But, trees must need good forces to firm as



Gerard E. Langman

End of Section One



## C. Types of Waters in the Hydrosphere

"Dad, I read that the ocean is very slowly becoming saltier," said Ace. "What is causing the ocean to get saltier, and from where does the salt come?"

"What you have read is correct," replied Dad. "From examining lower levels of sediment, oceanographers have found that oceans and seas were once less salty than they are today. These scientists have discovered two factors causing the increase in saltiness of oceans, as well as of some lakes and seas such as the Great Salt Lake in the state of Utah and the Dead Sea in Israel.

"First, salts are present in soil, and when fresh water, such as the flood we just experienced, washes away large amounts of soil, salt from the soil dissolves in the floodwaters. This salt is then carried to the ocean, sea, or lake.

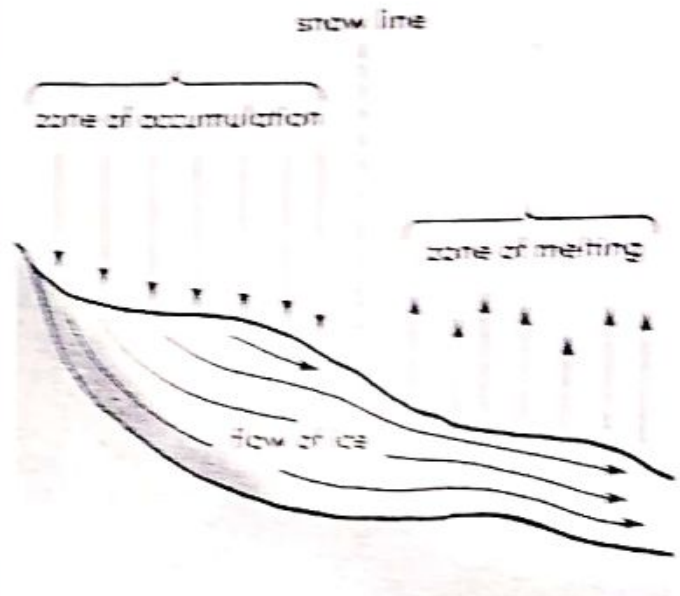
"The second factor affecting the ocean's salt content involves evaporation. The sun's heat continually evaporates ocean water, leaving salt behind.

"These two factors explain why the ocean is becoming saltier. These factors are even more pronounced in the Great Salt Lake and the Dead Sea, which have no outlets.

"Ocean water normally contains about 3.5 pounds (1.6 kg) of salt for every 100 pounds (45 kg) of water. Saltiness, however, varies throughout the oceans and seas. In places where the rivers feed fresh water containing few dissolved salts into the ocean, the water is less salty. In places where the temperature is hotter, more evaporation occurs, leaving more than the normal amount of salt in the remaining water. Also, when ocean water freezes, the thick sheet of ice that then covers the ocean is salt-free. The unfrozen sea water remaining contains more salt than normal sea water because so much ocean water was used to form ice."

"Dad, I've read about rivers of ice in Alaska,

Canada, and Greenland (grin'land)," said Ace. "Do these ice rivers actually flow like the water in Peaceful River?"



Glacier cross section

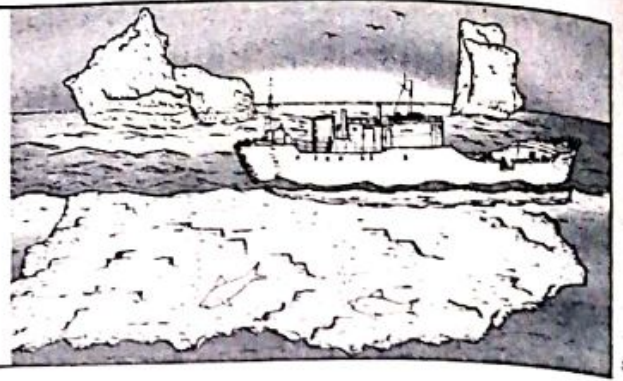
"A river of ice certainly does flow!" exclaimed Dad. "Rivers of ice flowing on land are called glaciers. Glaciers are formed from mountain snow that has not melted. This snow accumulates year by year, packs, and presses down until ice is formed at the bottom of the packed snow. The ice flows slowly out from the bottom of the snow pile and down the mountain valley until the ice melts or reaches the ocean. Even though glaciers move very slowly, their movement is still powerful enough to splinter boulders and widen whole valleys.

"Scientists estimate that over ten percent of Earth's land surface is permanently covered with glaciers. Two of the world's largest glaciers are located in Europe. The Jostedal (yo'ste-dal) Glacier in Norway covers about 200 square miles (782 km<sup>2</sup>). In the Swiss Alps, the Great Aletsch (a'letch) Glacier, said to contain more ice than any other glacier in the world, is 2 miles (3 km) wide, 17 miles (27 km) long, and over 1,000 feet (300 m) thick. The Lambert-Fischer (lam'bert-fish'er) Glacier in



### FACTS FROM SCIENCE

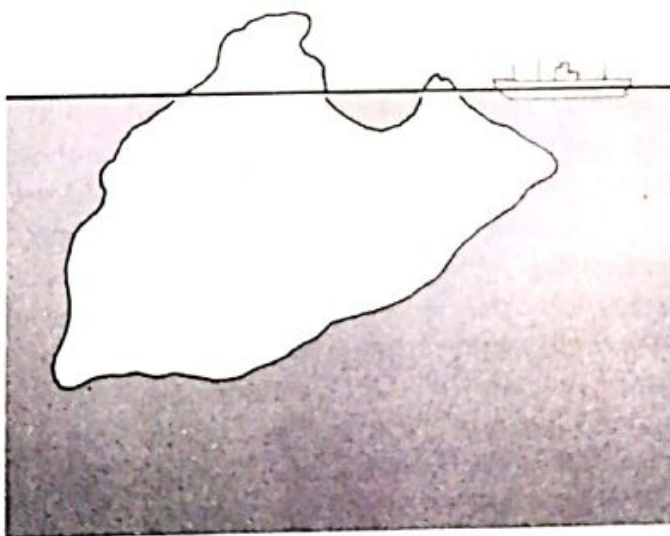
The largest iceberg on record was an Antarctic iceberg 208 miles (335 km) long and 60 miles (97 km) wide, covering over 12,000 square miles (31,080 km<sup>2</sup>). This iceberg was sighted 150 miles (241 km) west of Scott Island in the South Pacific Ocean.



the Australian territory of Antarctica, 320 miles (515 km) long, is probably the world's longest glacier.

"Do you know that some glaciers exist near the equator?" Dad asked. "Usually, we think of the equator as being very warm, but equatorial glaciers do occur at about 19,000 feet (5,800 m) on high mountains. These equatorial glaciers are found in the Andes Mountains of Ecuador, South America, and on Mt. Kilimanjaro (kīl'ī-mān-jä'rō) in Africa.

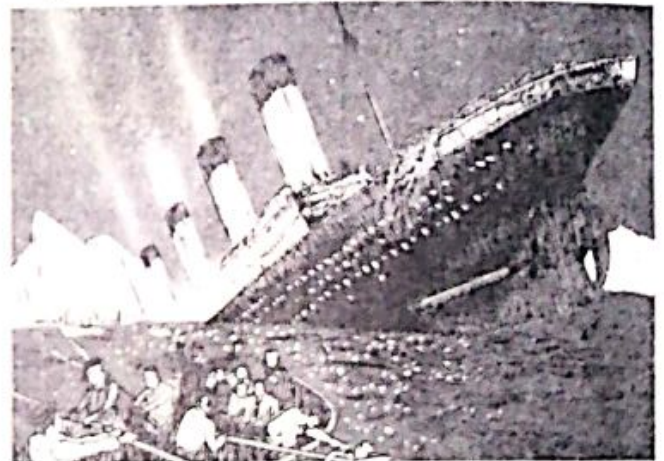
"If a glacier reaches the ocean, large masses of ice break off and float out to sea. These icebergs can be a great danger to ships because only ten percent of the iceberg is visible. The remaining ninety percent of the iceberg, unseen by ocean voyagers, floats below the water's surface."



Iceberg above and below water

"A ship might cross the Atlantic Ocean one hundred times on the amount of energy necessary to melt a small iceberg. Some icebergs are so large that twenty years pass before they melt completely."

"I remember reading that the *Titanic* (tī-tān'ik), the largest ship of its day, was considered unsinkable," said Ace. "On its first voyage, April 14, 1912, the *Titanic* struck an iceberg and sank. More than half of its 2,200 passengers and crew members perished in this tragic event."



Sinking of the *Titanic*

"Satan is like an iceberg," said Dad. "He may appear harmless, like the tip of an iceberg sticking out of the water. However, like the dangerous hidden portion of an iceberg, he has many hidden traps, or devices, that can hurt us. II Corinthians 11:14 states, 'And no marvel; for Satan himself is transformed into an angel of light.' We must be aware of this danger 'lest Satan should get an advantage of us: for we are not ignorant of his devices' (II Corinthians 2:11)."

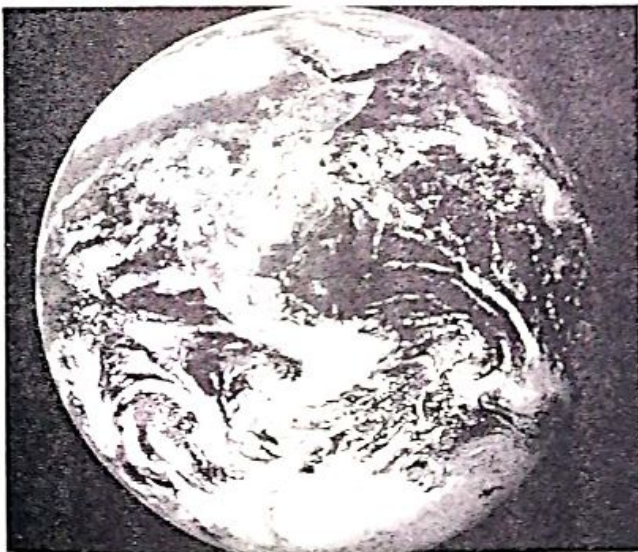


D7 p. 14-18

## II. Oceanography

"Dad, when my friends and I visited the planetarium, the narrator called Earth the 'blue planet' and Mars the 'red planet,'" stated Ace. "I understand that Mars looks red through a telescope, but why did the narrator call Earth the 'blue planet'?"

"In 1969 United States astronauts landed on the moon," Dad explained. "In photographs taken by the astronauts, Earth appeared blue because of the hydrosphere. Actually, since seventy-one percent of Earth's surface is covered with water, we could call Earth the 'water planet.' The oceans contain ninety-seven percent of all the water on Earth. This abundance of water makes Earth unique among planets. Psalm 104:1-6 states, '... O LORD my God, thou art very great ... Who layeth the beams of his chambers in the waters: ... Who laid the foundations of the earth ... Thou coveredst it with the deep as with a garment ...'"



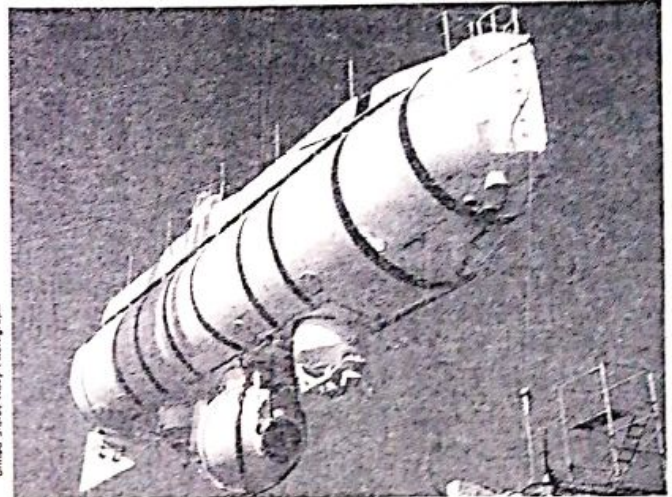
The blue planet

### A. Ocean Depth

"I have noticed that the Bible often refers to the ocean as the 'deep,'" said Ace. "How deep are oceans?"

Dad answered, "One place far out in the western Pacific, called the 'Mariana Trench,' is more than six miles (10 km) deep and is

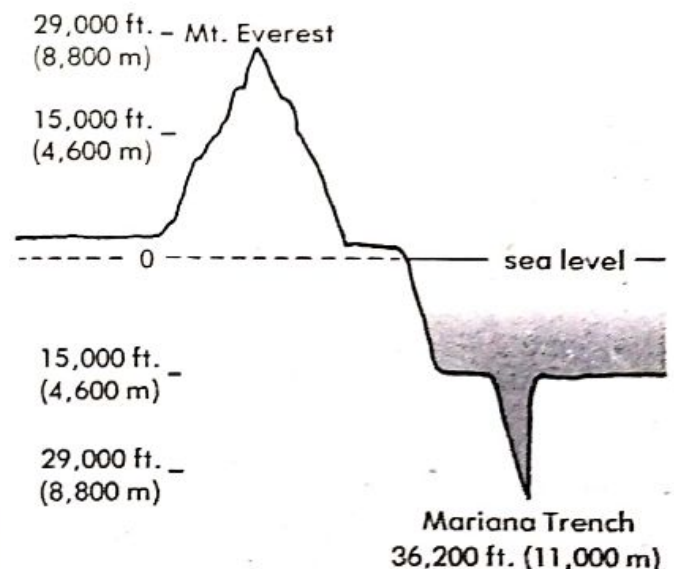
probably the ocean's deepest spot. In 1960 near the island of Guam (gwām), a U.S. Naval officer and an oceanographer were lowered in the bathyscaphe *Trieste* to the bottom of the Mariana Trench, a depth of 36,200 feet



Bathyscaphe

(11,000 m). The pressure there (16,124 pounds per square inch; 1,134 kg/cm<sup>2</sup>), without the protection of a bathyscaphe, would have crushed every bone in the two men's bodies.

"Sunlight never reaches the bottom of the Mariana Trench. The lack of the sun's warmth at that depth causes the temperature of water



Mt. Everest and Mariana Trench

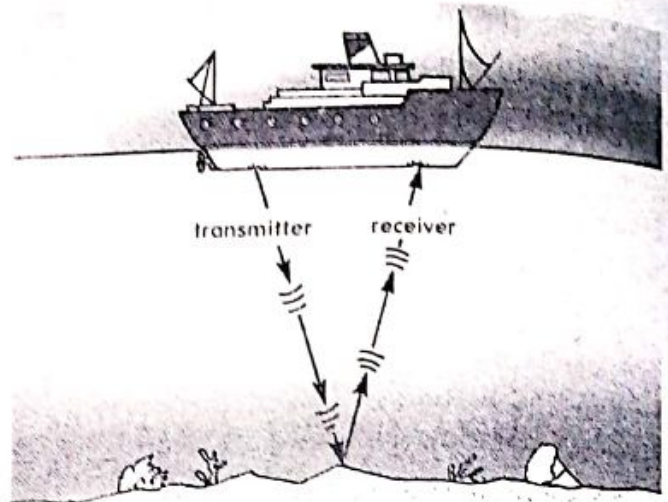


to be just above the freezing point ( $37.4^{\circ}\text{ F}$ ;  $3^{\circ}\text{ C}$ ). The highest mountain in the world, Mt. Everest in the Himalayas, is about 29,000 feet (8,800 m) high. If Mt. Everest could be lowered to the bottom of the Mariana Trench, the top of that mountain would still be one mile (1.6 km) beneath the ocean's surface. No mountain on Earth is as high as the ocean is deep."

"Dad," asked Ace, "how do men measure the ocean's depth?"

"At one time," answered Dad, "sailors tied knots in a line at regular places. They then threw out the line with a lead weight attached to the end and let the weight sink to the bottom. By counting the knots as they pulled the line in, they knew the ocean's depth in that spot."

"Since 1921 a device called sonar, short for 'sound navigation ranging,' has been used for finding ocean depths. Sonar equipment sends sound waves from a transmitter on a ship to the ocean bottom and counts the time an echo takes to return to the ship. The sonar equipment automatically computes the ocean's depth."

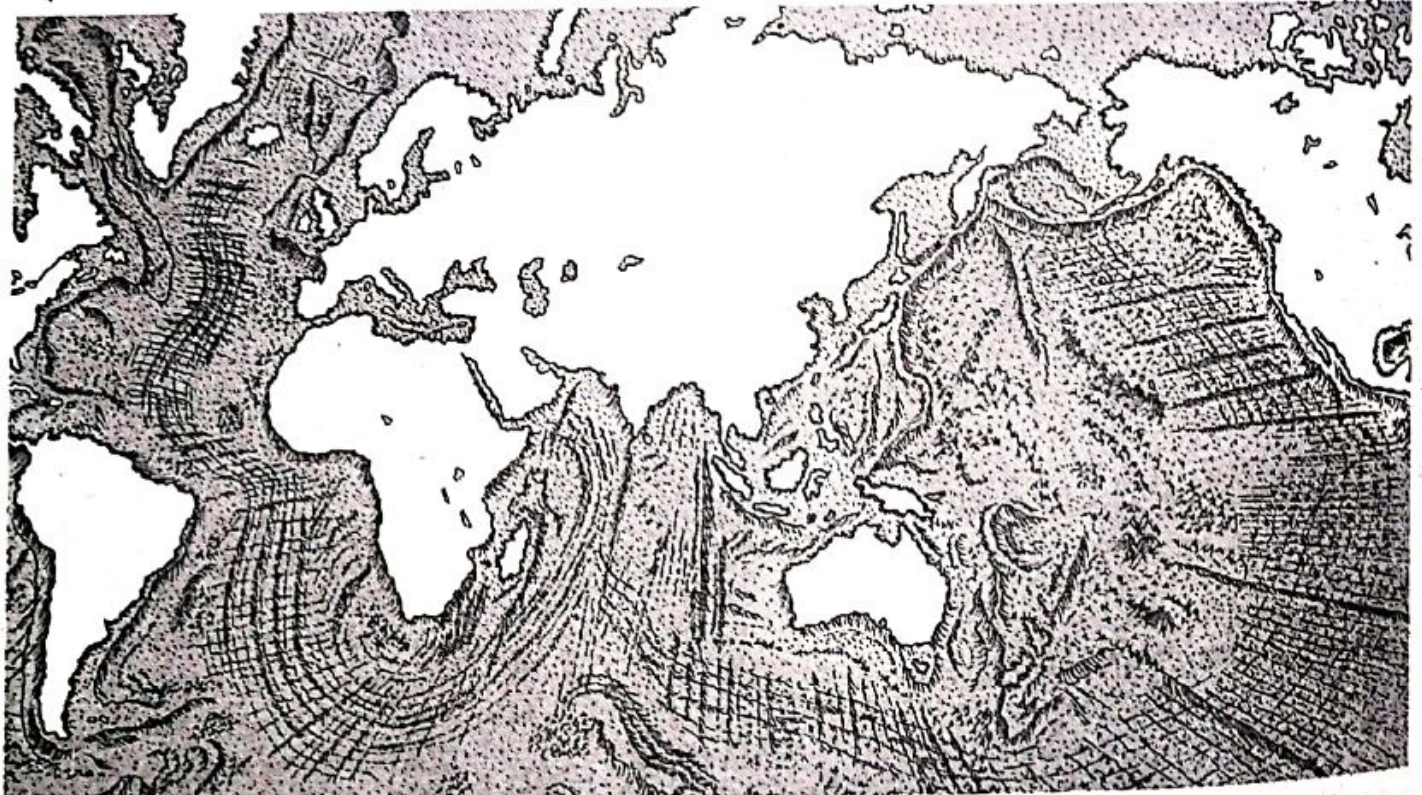


Finding the ocean's depth

"Sonar is often linked to machines that can draw a continuous graph of the ocean floor over which the ship passes. Cartographers have pieced together sonar readings from all over the world to make a topographical map of the ocean floor."

#### B. Ocean Floor Topography

"That is really amazing!" exclaimed Ace. "I had always thought that the ocean bottom was flat."



Ocean floor topography



"Far from it," replied Dad. "Of the two main oceans, the Pacific and the Atlantic, the Pacific is larger, deeper, and has a rougher topography. When you look at a world map, you can see how few large rivers empty into the Pacific Ocean. Rivers carry sediment and deposit it in oceans. Since more large rivers flow into the Atlantic Ocean basin, more sediment is carried into the Atlantic Ocean than into the Pacific. This sediment settles over the rough topography of the Atlantic. Therefore, the Atlantic floor is smoother than the Pacific floor, which receives less sediment.

"The Pacific Ocean has many trenches and mountains. Some of the mountains project above the ocean surface as islands, such as Polynesia (pōl'ē-nē'zhə) and the Aleutian (ə-lōō'shən) Islands.

"Many ocean mountains are volcanoes that have risen above the surface. Volcanoes in the Pacific formed the Hawaiian Islands. In the Atlantic, a range of underwater mountains, called the 'Mid-Atlantic Ridge,' runs north to south for about 10,000 miles (16,000 km), but only some of these Atlantic mountains rise high enough to form islands. A deep, narrow valley cut into the crest of the Mid-Atlantic Ridge extends along the ridge's entire length.

"Water around the continents is fairly shallow. Gently sloping to a depth of about 600 feet (180 m), the land under this water is called the 'continental shelf.' In some areas

the continental shelf extends several hundred miles (km). Other areas, especially around mountainous coasts, have no continental shelf at all. There, the coastline drops straight down into deep water.

"Where the continental shelf ends, the steep 'continental slope' begins. At this point, the water rapidly becomes much deeper. The walls of some of these continental slopes are steeper and higher than the walls of the Grand Canyon.

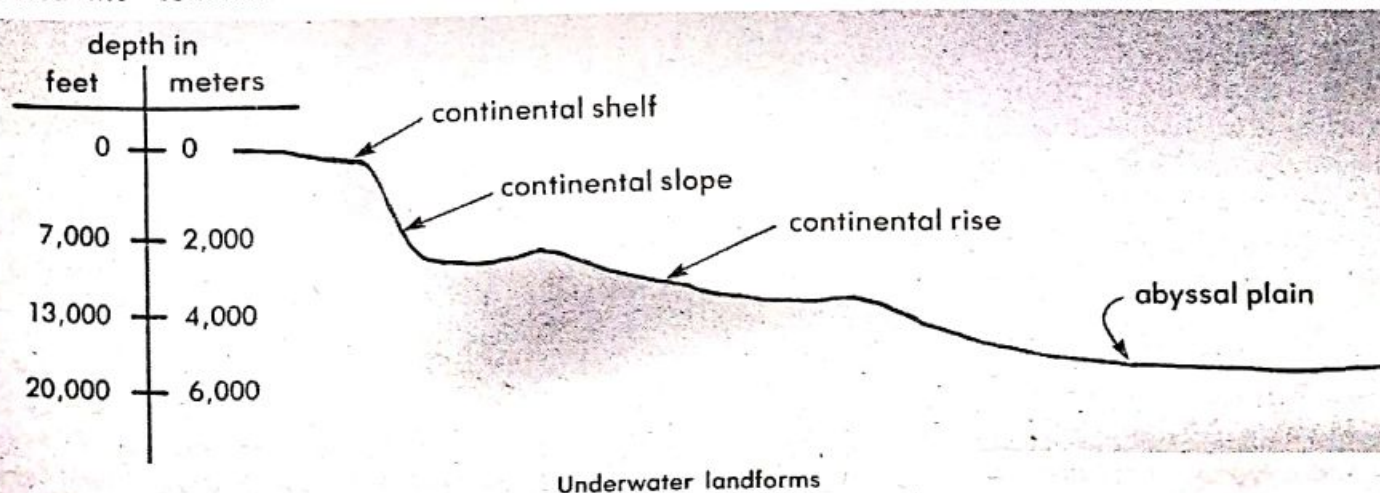
"The ocean floor then begins to level at a depth of more than two miles (3.2 km). This area is called the 'continental rise.' From the continental rise, the ocean floor again slopes gently down to the deep ocean bottom, called the abyss or the 'abyssal plain.'"

"Dad, some of the ocean's topography could be a picture of sin, couldn't it?" asked Ace.

"How do you mean, Ace?"

"Well," Ace said, "Pastor Alltruth said the further a sinner gets from the values of the Word of God, the faster and deeper the effects of sin drag him down into the abyss of sin. Even though some people sin less than others, 'all have sinned, and come short of the glory of God' (Romans 3:23)."

"That is true, Ace. Remember, though, that Christ can put a stop to that downward slide. The sinner must recognize his need of salvation and ask God to save him and thus stop his slide into sin's abyss. Isn't God great to save us, since we can't save ourselves?"





### C. Ocean Layers

"Dad, I'm glad that God's Word can penetrate the depths of sin to reach the lowest sinner," remarked Ace. "How far down does sunlight penetrate in the ocean?"

"Light penetrates through approximately the first 330 feet (100 m) of sea water. This upper layer of the ocean is the zone of light. Plants that make their food by photosynthesis live here in abundance. The sunlit layer also receives most of the sun's heat; water temperatures average from about 82° F (28° C) at the equator to -2° F (-19° C) at the poles. The sunlit region also houses corals, clams, starfish, anemones, and multitudes of food fish that feed on plants."



Zone of light

"Most of the oxygen in the sea is found within 600 feet (180 m) of the ocean's surface. To breathe, fish and other forms of sea life filter this oxygen from the water with their gills."

"How does oxygen get into the water, Dad?" asked Ace.

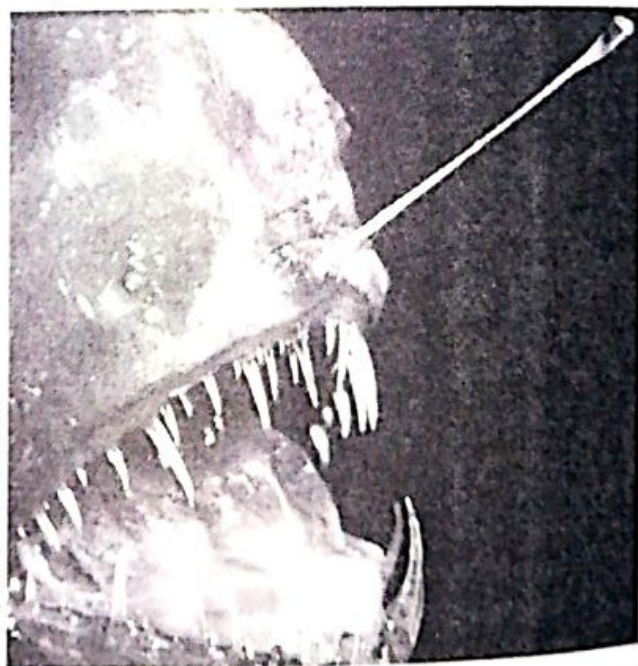
"Air pressure, the wind, wave splashing, sea plants giving off oxygen from photosynthesis, and surface disturbances all help mix air containing oxygen into the water, trapping some oxygen," explained Dad.

"Far down in the sunlit zone we find everything bathed in dim blue-green light because the water above has absorbed all other colors. In these depths are deep-diving creatures like dolphins, whales, rays, sharks, and squid, but life is not found in great abundance here as it is closer to the surface."

"Does any life exist in the ocean's abyss, Dad?"

"Yes, but it is strange life. Many fish in the sunless depths have lights in their bodies, and long, fierce-looking teeth to hold any other fish that come within reach. Other deep-ocean fish eat decayed matter that falls from the sunlit layer."

"These deep-sea creatures move around slowly to conserve the small supply of oxygen filtering down from the surface. The pressure of the sea on the bodies of deep-ocean fish is colossal, and the average temperature of the whole abyss is just above freezing. The darkness, extreme cold, lack of oxygen, and crushing pressure make the abyssal depths very uninviting places to visit."



Deep ocean fish

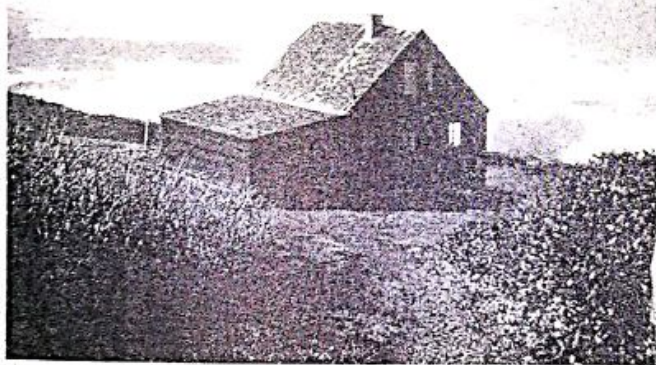
"Strange plants that make their food from chemical processes not related to photosynthesis live in the abyss. These plants feed on minerals from hot-water springs found here"



and there in the depths and support unusual varieties of abyssal plant and animal life. Oceanographers have recently discovered an abyssal plant that can produce its food with only 0.0005 percent of the amount of sunlight found at the surface."

#### D. Ocean Waves

"A friend once told me about the tremendous waves that spilled over the sea wall during a storm along the New Hampshire (hämp'shīr) coast," said Ace. "He said that these storm waves had thrown numerous rocks and pebbles, along with tons of sand and seaweed, over the sea wall onto the seacoast road."



Storm waves

"Yes," replied Dad. "Even the Bible, in Jeremiah 5:22, describes the awesome sea waves, 'Fear ye not me? saith the LORD: will ye not tremble at my presence, which have placed the sand for the bound of the sea by a perpetual decree, that it cannot pass it: and though the waves thereof toss themselves, . . . yet can they not pass over it?'"

"God also compares the wicked to stormy ocean waves that are constantly moving or working, and that finally throw trash and dirt up onto the beach. Isaiah 57:20, 21 states, 'But the wicked are like the troubled sea, when it cannot rest, whose waters cast up mire and

dirt. There is no peace, saith my God, to the wicked.'

"Storms at sea sometimes create giant waves 100 feet (30 m) high that can swallow and sink large ships. Most waves, however, are harmless and are the most characteristic feature of the ocean's surface. Wind makes waves by blowing over the water's surface. Friction between wind and water causes water to pile up, producing ripples. As wind blows steadily, the ripples increase in size until they form waves. Wind then moves the waves along, increasing their size. Waves remaining after a storm, or moving away from a storm area, form great ocean 'swells.' Swells are long, low waves that move over the ocean's surface, sometimes great distances, until they reach a land mass."



Ocean swells

"How an ocean wave could sink a large ship is difficult for me to understand," Ace declared.

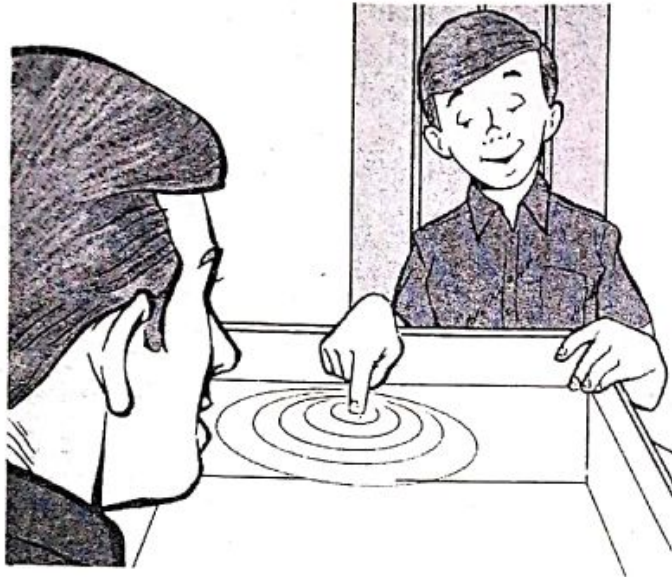
"You must first understand how waves move in the water," replied Dad. "Though waves appear to move toward land, water molecules themselves are not moving toward land. Do you still have that cork you were playing with the other day?"

"Yes," answered Ace. "It is in my room."

"If you will get it, I'll demonstrate this idea."



When Ace returned, Mr. Virtueson had already placed a pan of water on the middle of the kitchen table. Dad said, "Wiggle your fingers in the water on your side of the pan. Do you see how the waves seem to be flowing toward me?"

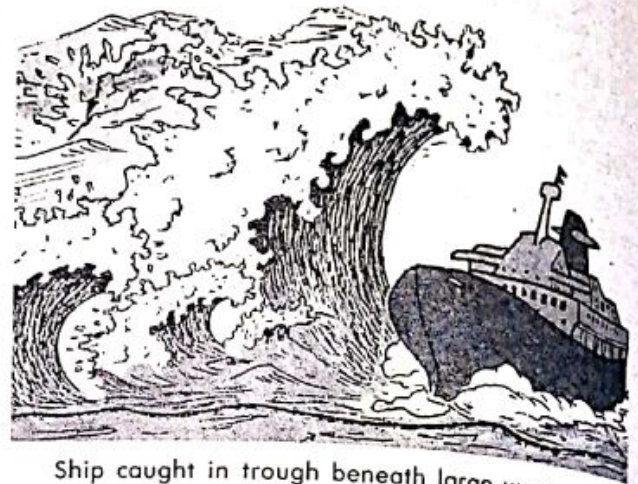


"Yes, Dad," answered Ace. "The wave surface seems to 'roll' toward you across the top of the water."

After the water settled, Dad said, "Now, place the cork in the middle of the pan and wiggle your fingers again." As Ace made the waves in the pan, the cork began to bob up and down, but it did not move toward the other side of the pan.

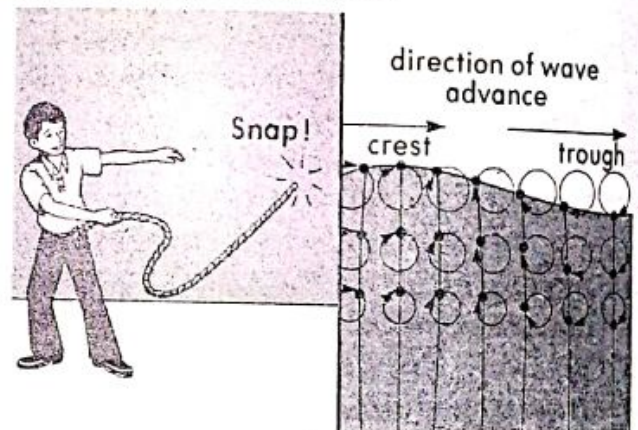
"Why doesn't the cork move to the other side?" asked Ace.

Dad answered, "While the shape of the wave moves across a body of water, the molecules of water do not. Instead, each molecule moves in a circular pattern. Each molecule moves forward and up to a high point, or 'crest' of the wave, and then back and down to a low point, or trough of the wave. This crest-trough cycle repeats as the next wave passes. A wave with an extremely high crest will also have an extremely low trough. If a ship is caught in such a trough, the wave crest may break over the ship and sink it."



Ship caught in trough beneath large wave crest

"Wave circulation is like the snapping of a rope. Parts of the rope move up, then down, all the way to the end of the rope, but the rope molecules themselves do not move down the rope with the wave. What actually moves along the rope is the energy you produce when you snap the rope. What actually moves in ocean waves is the energy put there by the wind or some other force."



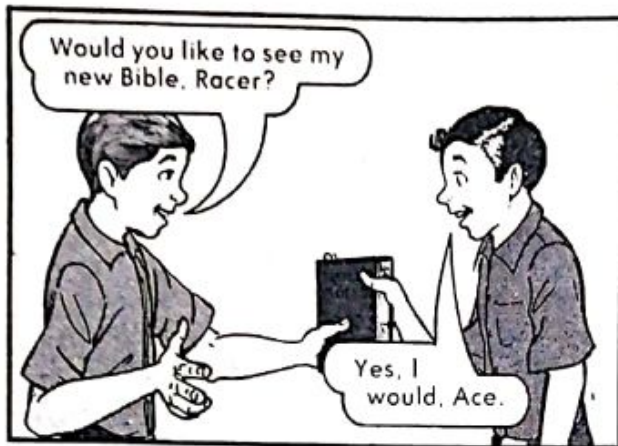
Wave circulation

"Ace, how has God used waves of the sea to teach us about praying for wisdom?" asked Dad.

"Well, Dad, James 1:5, 6 states, 'If any of you lack wisdom, let him ask of God, that giveth to all men liberally, and upbraideth not; and it shall be given him. But let him ask in faith, nothing wavering. For he that wavereth is like a wave of the sea driven with the wind and tossed.'"

End of Section Two





### Section Three

### II. Oceanography (continued)

#### D. Ocean Waves (continued)

"Ace, some Polynesian men can use waves to navigate the ocean without instruments," said Dad.

"How can they do that?" asked Ace.

"At night," answered Dad, "they can tell where they are in relation to the stars overhead, but during the day, they depend upon being able to feel certain types of waves as the waves hit the boat. Waves traveling through the ocean change shape and direction as they hit the different islands in their paths. Polynesian navigators learn to recognize the different wave shapes as well as they recognize their friends' faces.

"Even though these navigators can recognize the waves very well on sight, they navigate

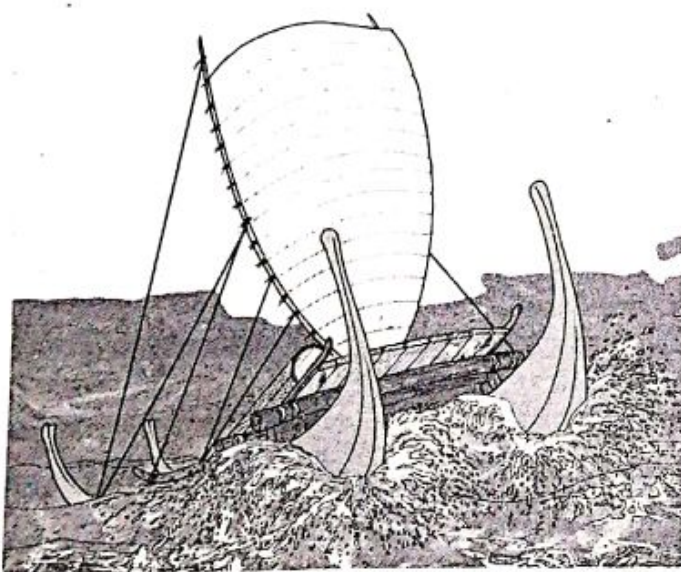
more by the sway of the boat as the waves pass underneath. One navigator could tell how far he had gone by the shape of the waves that hit his boat. He knew that he would be traveling through three distinct areas, and the shapes of the waves are different in each area.

"Another navigator directed a canoe on a straight course for eight hours by feeling the sway of a particular kind of wave that hit the boat about every ten minutes. This wave caused the back of the boat to rise without rolling the boat. He could recognize this particular sway even though he passed through a storm during part of his journey.

"Some Polynesian families have passed from generation to generation this ancient art of navigating by the feel of the waves. Experienced navigators use 'stick charts,' maps made from sticks and stones that describe complex wave patterns and island positions, when teaching others this unusual navigational process."

"Dad, I have noticed that waves do have different shapes. When we went to the ocean, I noticed that the waves far out from land were different from those near shore," Ace related. "What is the reason for the difference?"

"You were very observant," said Dad. "As a long, low swell travels toward land, the ocean depth decreases, causing the wave's energy to push against the sloping bottom. Wave

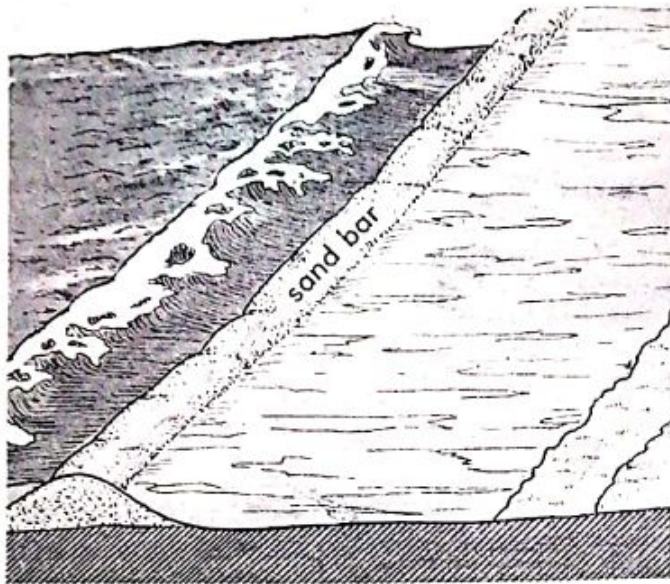


Navigating canoe on the ocean



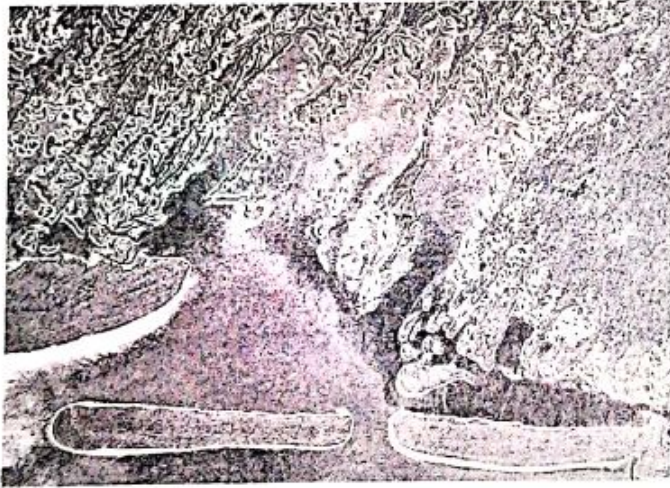






Sand bar

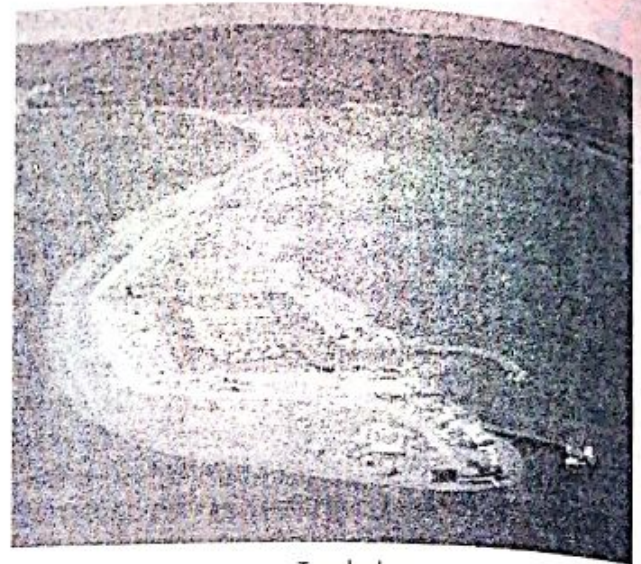
islands to form. Padre (pä'drī) Island, off the coast of Texas, is the longest barrier island in the U.S. Many barrier islands are present along the Atlantic coast south of Rhode (rōd) Island. Some cities, such as Atlantic City, New Jersey, and Miami (mī-ām'ī) Beach, Florida, are built on barrier islands."



Barrier island

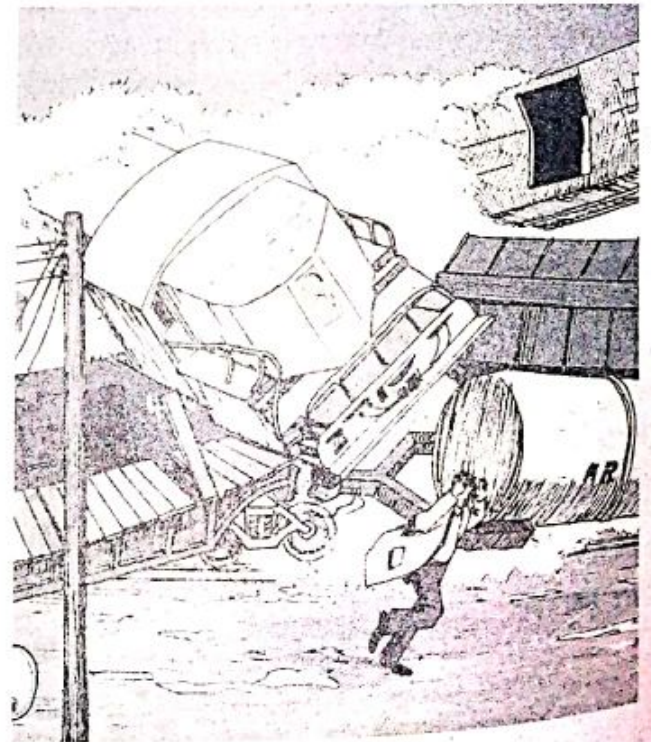
"A sand or gravel beach connecting one island to another island is called a 'tombolo' (tōm'bō-lō). A tombolo can also connect an island with the mainland."

"I've read about another kind of wave that is very destructive," said Ace. "In 1883 the Indonesian island of Krakatoa (krä'kä-tō'ä), between Sumatra (sōō-mä'tre) and Java (jä've),



Tombolo

exploded because of internal volcanic forces, which threw huge boulders into the sky. Within weeks, ash clouded the sky all over the world. People heard the explosion 3,000 miles (4,800 km) away, and others felt its effect 8,000 miles (12,900 km) away. The most destructive element of the explosion was the giant wave, or tsunami, which it created. The tsunami traveled with destructive force throughout the Pacific Ocean and struck four of the surrounding continents. The tsunami drowned



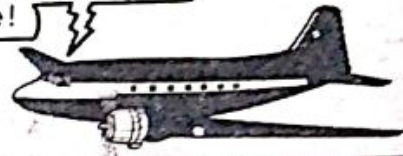
Tsunami strikes!



## FACTS FROM SCIENCE

The highest recorded tsunami appeared off Ishigaki Island between Taiwan and Japan on April 24, 1971. The wave rose to an estimated height of 278 feet (85 m) and tossed an 850-ton block of coral more than a mile (1.6 km). Tsunamis have been observed to travel at speeds up to 500 miles per hour (800 km/h). At least 500 tsunamis have been recorded between 479 B.C. and A.D. 1971. Of the 500 tsunamis, 270 were destructive.

Flight 421 to Control . . .  
I've just been passed  
by a wave!



nearly 40,000 people on nearby Java and Sumatra and was noticed as a high tide as far away as Hawaii and South America before its force was spent. When the tsunami encountered land, this violent wave rose to a height of 100 feet (30 m) and crushed whole villages when it crashed down."

"Yes, underwater earthquakes, volcanoes, and rock slides produce great energy that moves through the ocean as giant waves, or tsunamis," Dad explained. "Tsunamis move at speeds up to 500 miles per hour (800 km/h) and have caused much damage and many deaths as they have pounded coastlines throughout the world."

"Speaking of coastlines, my friend from New Hampshire told me something difficult to believe," related Ace. "He said that a 'river' in the ocean brings warm water from near the equator all the way up to New Hampshire and Maine."

"Your friend is correct," replied Dad. "The oceans have many 'rivers,' or currents."

### E. Ocean Currents

"Currents in the sea remind me of a field trip a few years ago when I saw a statue of U.S. Navy Commander (Cmdr.) Matthew Maury," said Ace. "I later found that once when Cmdr. Maury was confined to bed during an illness, his son read the Bible to him. When his son read Psalm 8:8, 'The fowl of the air, and the fish of the sea, and whatsoever passeth through the paths of the seas,' Cmdr. Maury

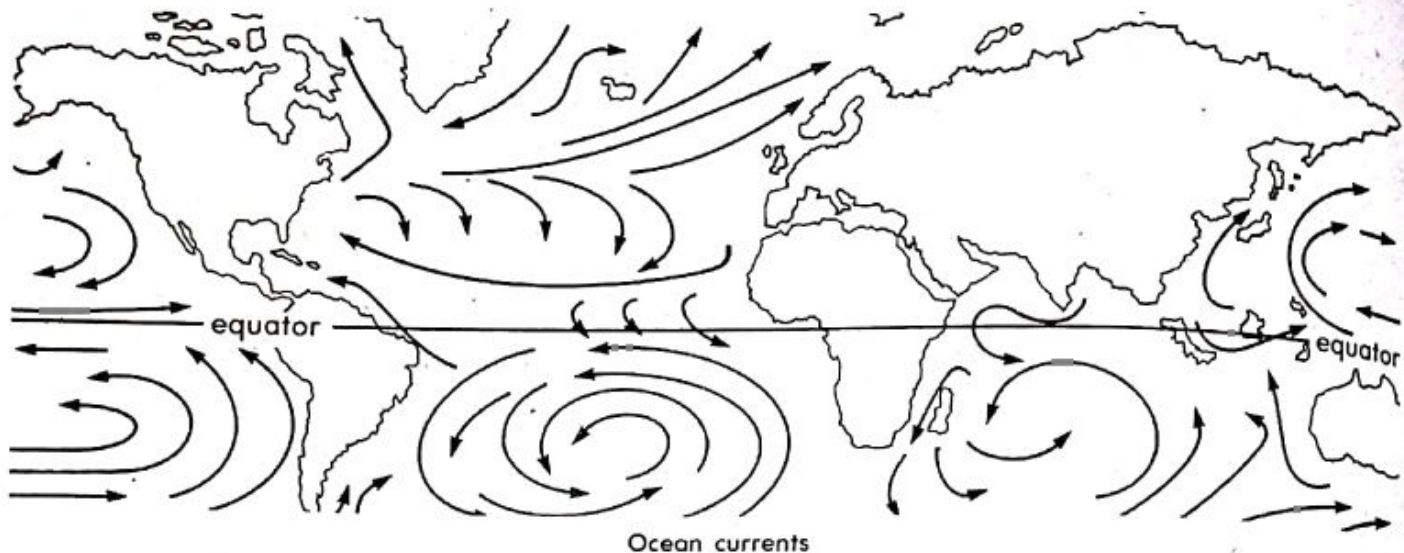
concluded that specific patterns of wind and water movement create 'paths' that would allow a ship to cross the oceans more quickly. He determined to find the 'paths of the seas' to which the Scripture referred.

"Trying to find ways to avoid shipping delays, Cmdr. Maury made detailed studies from ships' logs. Dr. Benjamin Franklin had noticed earlier that ships crossing the Atlantic Ocean were sometimes delayed as much as two weeks. In 1860 Cmdr. Maury suggested that the ocean was a circulating system, and after much study of wind currents and ocean currents, he plotted shipping routes across the ocean. His work helped shipping companies save much money, and it also helped them reduce the possibility of accidents."



Matthew Maury





"What causes those ocean currents?" asked Ace.

"Wind action and the force of the rotating Earth cause ocean currents," answered Dad. "Winds, the first cause of currents, blow water on either side of the equator toward the west. These steady winds, called 'trade winds,' blow the currents until they reach a continent. Currents north of the equator are then turned north, and currents south of the equator are turned south.

"These currents continue their courses until they reach a latitude of about 40°. There, powerful westerly winds blow currents toward the east, until they again reach a continent. North of the equator, currents are turned south; south of the equator, currents are turned north, back toward the equator. Thus, the circles of currents are complete. Think of a figure eight with the equator in the center, and you will have the right idea."

"What current brings warm water up the eastern coast of the United States?" Ace asked.

"That current is the Gulf Stream. Fed by warm waters from the Caribbean (kār'ā·bē'en) Sea, the Gulf Stream begins in the eastern part of the Gulf of Mexico. Larger than any river on land, the Gulf Stream is fifty miles (80 km) wide at its source and moves toward northwestern Europe at speeds up to four miles an hour (6 km/h). The Gulf Stream current

warms the ocean as far north as the arctic island of Spitsbergen (spīts'bûr'gən). Let's look at a map of ocean currents and trace the Gulf Stream arrows up around Greenland and toward Norway."



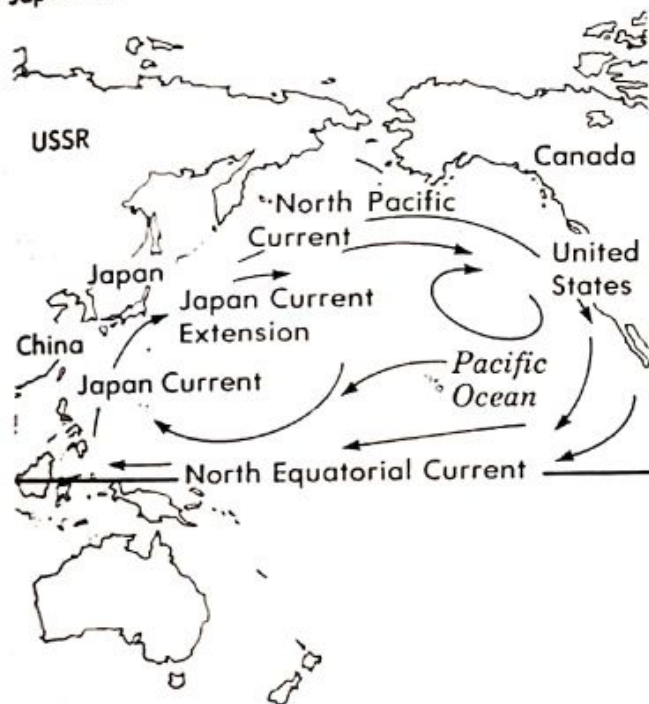
"Air warms as it blows across the warm water of the Gulf Stream and on to northwestern Europe. This warming effect produces a warmer climate in northwestern Europe than in parts of North America at the same latitude. For instance, Norway's average January temperature is about 45° F (7° C).



higher than that of Greenland and Labrador (lăb'ra-dôr'), which are at the same latitude."

"I have also heard of the Japan Current," said Ace. "Does it produce the same effect?"

"Yes, Ace. The Japan Current warms the western coast of North America. However, surface temperatures along the Japan Current are lower than those of the Gulf Stream. The lower temperature causes the Japan Current to have less of a warming effect on the climate of northwestern North America than the Gulf Stream has on the climate of northwestern Europe. The Japan Current begins near the Philippines, separates from the North Equatorial Current, and travels north past Taiwan (tî'wăn') and Japan. From there, it turns east and is called the Japan Current Extension, joining with the North Pacific Current farther on in the Pacific Ocean. The Japan Current is caused by wind action."

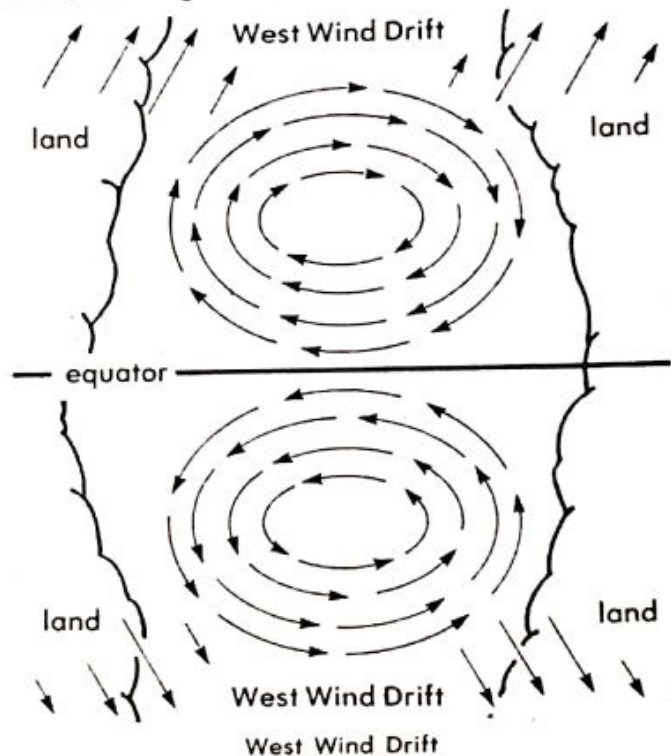


Japan Current

"The rotation force of our Earth is the second cause of currents. Earth's rotation tends to steer moving currents to the right, or clockwise, in the Northern Hemisphere and to the left, or counterclockwise, in the Southern Hemisphere. This steering effect, which increases

as distance from the equator increases, is strongest near the poles.

"Circling the globe near the South Pole is the West Wind Drift, a current of the Antarctic Ocean. Drifts are not as strong as surface currents. A drift consists of cold water that moves from either of the polar regions into the other ocean currents. The West Wind Drift comes up on the west coasts of Australia, South America, and Africa. Also, cold water from the north polar region enters the Pacific at the Bering (băr'ing) Strait between Alaska and Russia. Cold water enters the Atlantic between Canada and Greenland, forming the Labrador Current. From the North Pole, cold water also flows down the east coast of Greenland, forming the Greenland Current."

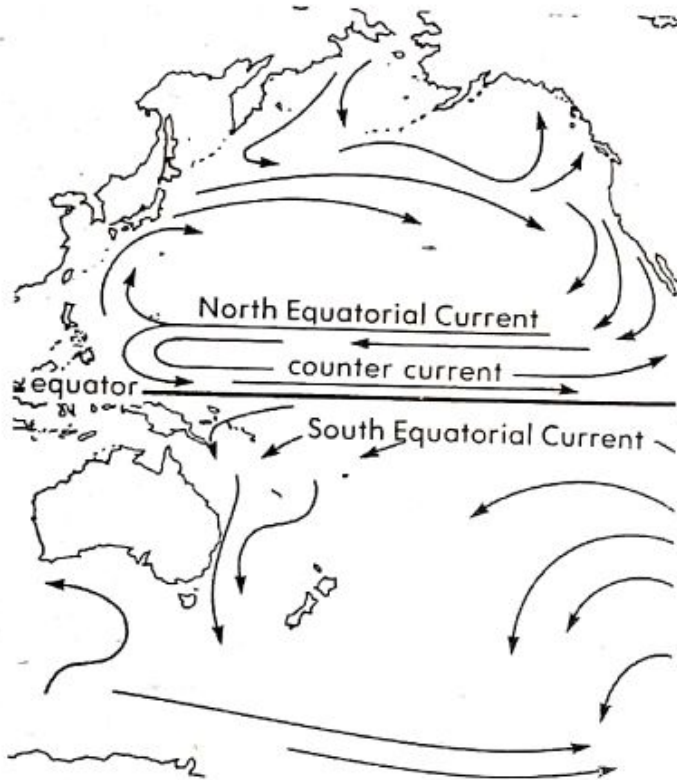


"Dad, this map shows a current at the equator traveling west to east, opposite the direction of other ocean currents near the equator," stated Ace.

"Yes, many stories tell of sailing ships that have drifted for many days when crossing the equator because no steady wind blows there," replied Dad. "The lack of steady wind at the equator permits one current to flow east to



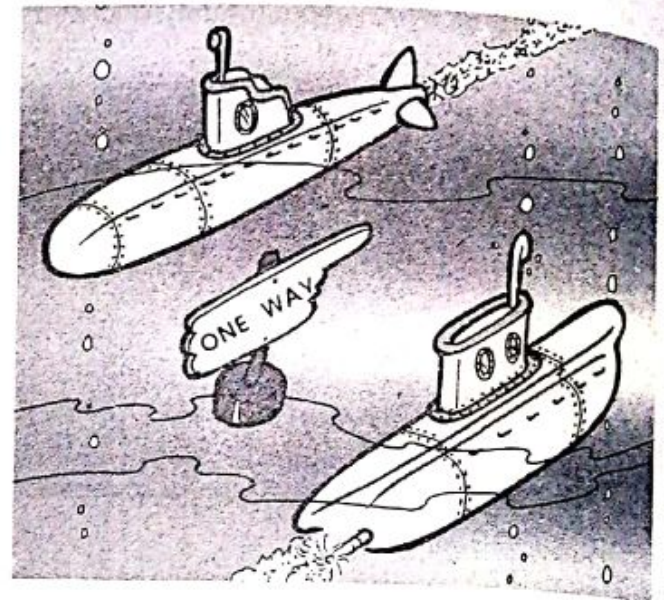
west, counter to the direction of Earth's rotation, and allows another to travel west to east with Earth's rotation. Below the surface of the oceans, currents also exist flowing counter to the direction of the surface currents. Such a counter current exists 9,000 feet (2,700 m) below the Gulf Stream, moving cold water about eight miles (13 km) per day back to the Caribbean Sea."



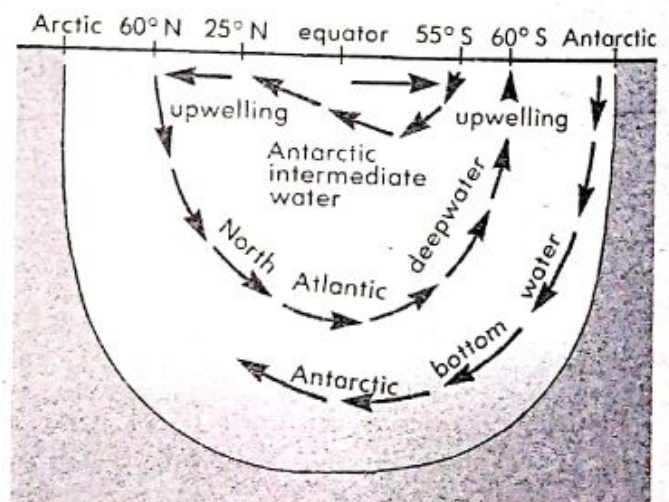
Counter currents at equator

"In World War II, the Germans used counter currents to move through the Strait of Gibraltar (jī-brōl'tar) without the British detecting them. One surface current flows into the Mediterranean Sea, while another current directly beneath flows out. The Germans traveled with the flow of the current. When they wanted to go into the Mediterranean, the Germans simply submerged their submarines to the depth of the ingoing current and shut off the engines. The current took them on a free and very quiet ride past the British fortress at the Strait of Gibraltar. By using the proper currents, they could travel silently in either direction.

"Ocean temperature currents are different



from wind and Earth rotation currents. Different water temperatures in different areas of the ocean cause ocean temperature currents. Cold water sinks to ocean depths, while warmer water rises. Water becomes colder at the poles, sinks to the ocean bottom and flows south from the North Pole and north from the South Pole. As water passes the equator, the water is warmed and slowly begins to rise. This water rising from ocean depths is called an upwelling. Upwellings bring toward the surface deep-water nutrients that provide food for plankton and other sea life. At such upwellings, sea life is abundant."



Temperature currents

"Dad, does the upwelling of polar water cause the great tidal currents in Canada?"



asked Ace. "I read about the Bay of Fundy (fūn'di) located in Nova Scotia, Canada, where the tidal current rushes into the harbor causing the water to rise as high as sixty feet (18 m) in some places."

DE p. 30-31

### F. Ocean Tides

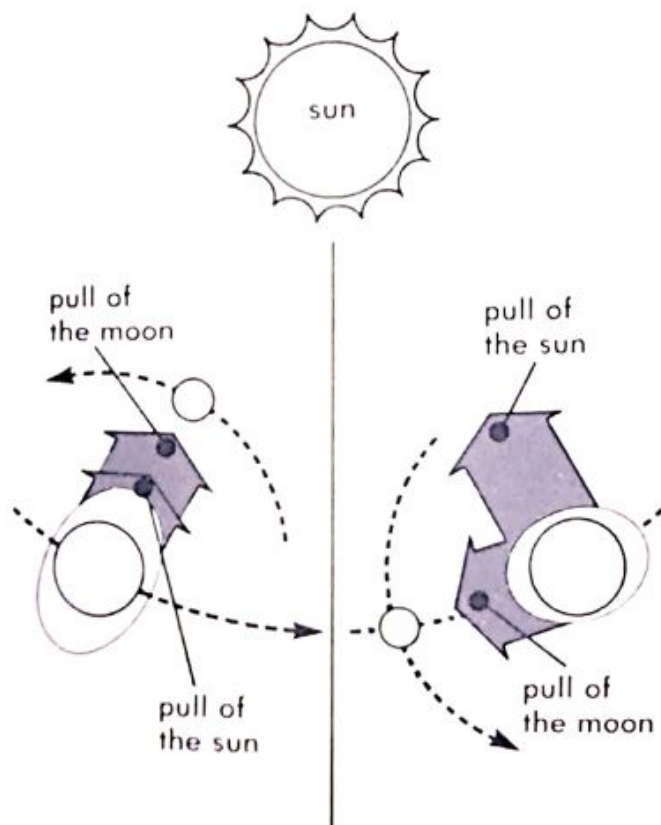
"Well, that current is not caused by upwelling, but by the tides of the ocean," Dad explained. "Tides are particularly related to the gravitational pull of the moon. The moon is close enough to Earth to exert a strong gravitational pull on the oceans. The oceans bulge because they are not solid enough to resist the moon's pull."

"Ocean tides are also related to the sun's gravitational pull. Sometimes the sun and moon line up with Earth and exert a very strong gravitational pull on Earth. The sun's gravitational pull exerts a tidal force that is about one-half that of the moon's."

new moon and the full moon when both the sun and moon pull in the same direction. Tides are at their lowest when the sun and moon pull counter to each other.

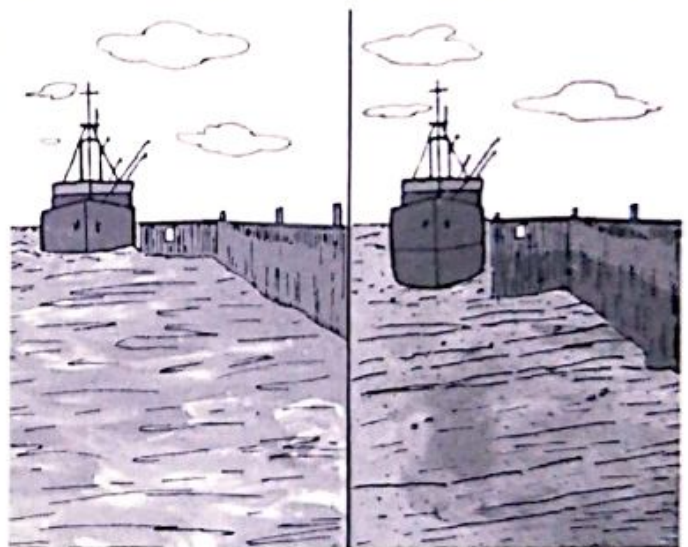
"High and low tides occur during the same day. At high tide, ocean water will rise higher on the beach. Several hours later, at low tide, the water goes back out to the ocean and leaves the beach dry. High and low tides occur on an average of twice a day."

"Ocean tides may cause certain unusual tidal currents, such as that in the Bay of Fundy in Nova Scotia, Canada. When tides rise along a coastline, every river mouth is affected. Tides move inland into river mouths, sometimes for great distances. The tides rush up the river as far as possible, sometimes as fast as twelve miles per hour (19 km/h). Such a fast tide, known as a 'flood current,' hinders safe handling of



Effect of gravity on tides

"Tides are also related to the phases of the moon. Ocean tides rise their highest during the



Tidal current

ships. As a result, ships must wait to leave the river's mouth until the flood current reaches high tide or begins to return seaward. The flood current entering the Amazon River in Brazil sometimes goes as far as 200 miles (320 km) upstream! Most flood currents, however, travel only a few miles (km) upriver before exhausting themselves. Tides rushing into a narrow opening in the land cause the unusually large tidal current in the Bay of Fundy.

"The Canadians are building a tidal power station in the Bay of Fundy. The French have



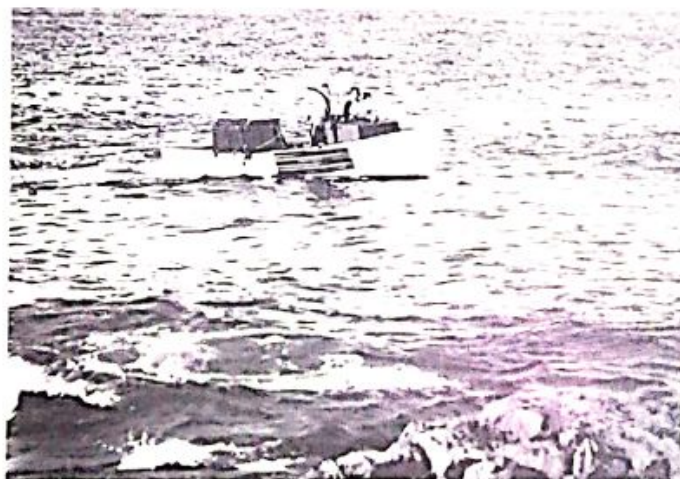
already built a dam to harness the energy of the tides flowing up the Rance (răns) River from the English Channel. These tides rise as high as 44 feet (13 m). Electricity is generated as the dam traps the water at high tide and directs its flow through electric generators as it escapes at low tide."

### G. Ocean Resources

"Learning from you about the oceans is really interesting, Dad," said Ace.

"I'm glad you are interested in learning about oceans, Ace, because they will become more important in the future than they are today. For example, our world's oceans may become a major resource for water, food, and minerals. Although abundant, ocean water must be made pure before it can be used. Making ocean water pure is mostly a matter of removing the salt. This process is expensive and slow, but scientists are trying to improve the methods used. What you learn now about oceans may prepare you to discover a quick and inexpensive method to make ocean water pure.

"Food in many forms is found in the ocean. Fish is one form of sea food. Other forms are hidden in the floating plankton and seaweed of surface waters. Scientists are trying to make pleasant-tasting food powder from



Fishing in the ocean

processed sea organisms. Food from the oceans could feed more people than are now on Earth if only better methods of producing, harvesting, and preparing ocean food were available.

"Minerals are another vast ocean resource. Lumps lying on the ocean floor contain some valuable minerals.

"Many of the world's largest oil fields are along coastlines. At the present time, land resources alone cannot meet the world's fuel oil needs. Therefore, industry is carefully developing offshore drilling for oil and natural gas. Truly, Earth is full of God's riches."



Offshore drilling

"The most important preparation you can make for yourself as a child of God, though, is to meditate upon God's Word and apply its principles to your daily life.

"Joshua 1:8 states, 'This book of the law shall not depart out of thy mouth; but thou shalt meditate therein day and night, that thou mayest observe to do according to all that is written therein: for then thou shalt make thy way prosperous, and then thou shalt have good success.'"

"Thank you, Dad," answered Ace quietly. "I will meditate upon God's Word every day and make it a part of my life, because I certainly want to be successful in God's plan for my life."

### End of Section Three

Now turn to your Activity Pac and work the activities as directed, while rereading the related PACE text.





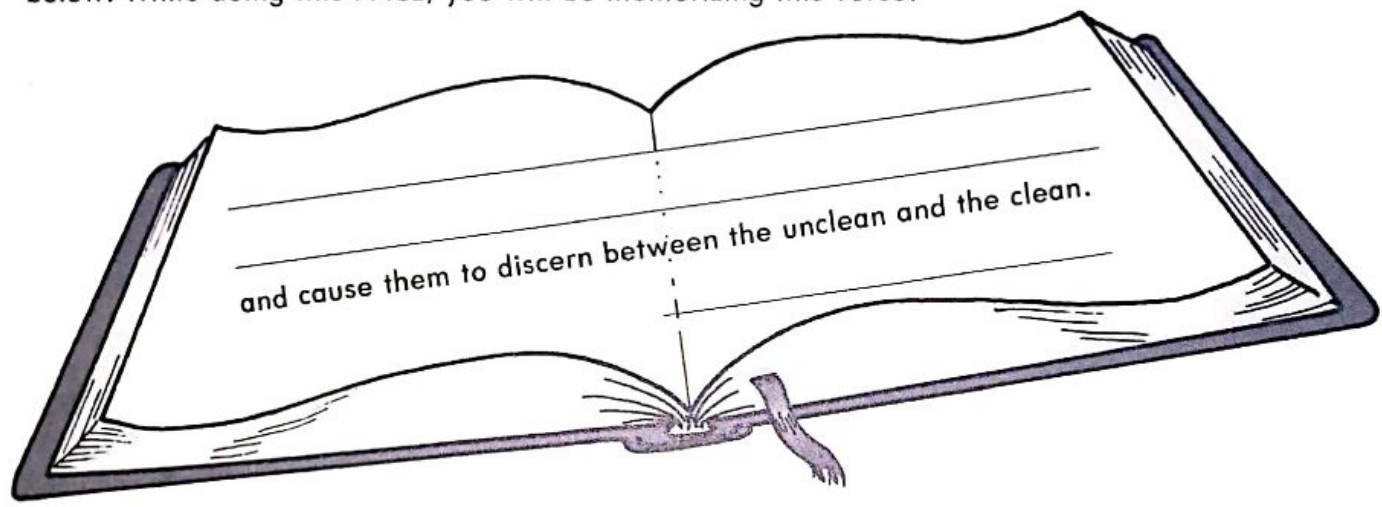
My Goals

- To review action and linking verbs
- To learn the four principal parts of regular and irregular verbs
- To learn to form the simple tenses from the principal parts of a verb
  1. present
  2. past
  3. future
- To learn to have understanding in making the right decision about any situation—to be discerning

**Discerning**

You'd better be learning to be discerning.  
Someday Discerning may be earning you a living.  
So studies demanding take understanding;  
Study hard and get the very job cut out for you.

Find Ezekiel 44:23 in your Bible. Correctly complete the verse and reference in the Bible picture below. While doing this PACE, you will be memorizing this verse.



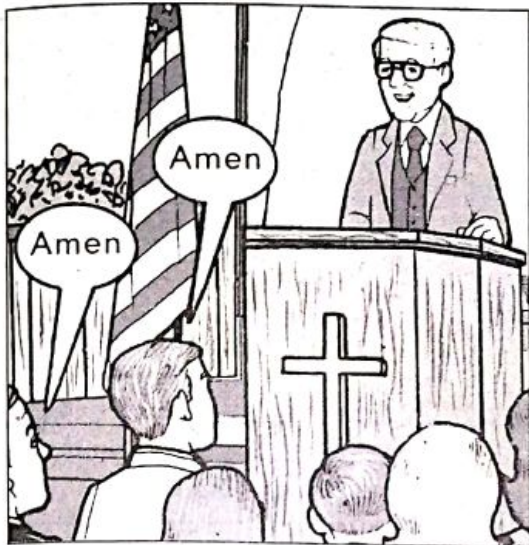
Discerning

Do you remember?

Symbol and Sound Chart

ă = glad	ĩ = sit	ōō = tool	oi = coin	zh = Asia
ā = save	ī = kind	ū = cup	ou = out	ə = a in above
â = fair	ō = box	ū = use	sh = she	ə = e in the
ā = barn	ō = go	ch = much	th = this, thin	ə = i in easily
ē = best	ō = soft, order	kw = queen	ūr = burn	ə = o in lemon
ē = bee	ōō = look	ng = song	z = has	ə = u in Jesus





### Direction Through Leadership

As Pastor Alltruth stands before his people Sunday morning at Highland Church, he explains, "After much prayer, I have met with the deacons, and we agree that God is directing us to build a new building for our Learning Center."

Several "amens" are heard, and from the delighted smiles, Pastor Alltruth can see that the people also sense God's leadership. "Thank You, Lord," he prays silently. "Your work is growing, and God's people are willing to follow Your leading."

Pastor Alltruth continues speaking to the people, "We must pray and be discerning. A number of building plans from which we could choose are available, but we want the most economical plan—one that will provide for the needs of our church-school."

Everyone is attentive as Pastor Alltruth continues, "In our deacons' meeting, we decided not to borrow the money for the building. We believe we should trust the Lord to provide the funds as they are needed for each phase of the construction."

Now everyone is really excited! "How wonderful," some think, "to have the building paid for when it is finished!"

"How discerning!" others think. "Our pastor has again made a wise decision."

Pastor Alltruth concludes, "By paying cash for materials, we can get the best use out of the least amount of money. The money we save can be used to furnish the Learning Center. Let's all pray right now and ask God to give us wisdom and discernment as we build."

Thinking about what happened in our story, read Proverbs 22:7b. Keeping in mind the principles of Proverbs 22:7b, answer these questions.

(1) What two responses indicate the church people are following Pastor Alltruth and the deacons?

(a) \_\_\_\_\_ (b) \_\_\_\_\_

(2) Instead of borrowing the money to build, the church has decided to \_\_\_\_\_.

(3) In light of Proverbs 22:7b, is this a wise decision? \_\_\_\_\_

(4) What does the one who borrows become to the one who loans? \_\_\_\_\_

(5) As Pastor Alltruth states, what are two benefits of not borrowing the money?

(a) \_\_\_\_\_

(b) \_\_\_\_\_

Now apply the wisdom of Proverbs 22:7b to yourself by writing "I" or "me" in each blank.

(6) If \_\_\_\_\_ borrow money \_\_\_\_\_ will become a servant to the one who lends \_\_\_\_\_ money.

(7) In light of Proverbs 22:7b, do you think it is wise to borrow money? \_\_\_\_\_



Remember? The key word of a sentence is the verb.

Every sentence must have a verb.

○ verb

A sentence:  
I am preparing for God's work.  
Not a sentence:  
I for God's work.

We have learned that there are two large classes of verbs—action and linking.

### Action Verbs

verbs that show action, such as leap, pray, and think

verbs that show ownership, such as have, has, and had

### Linking Verbs

state-of-being verbs, such as am, is, and are

verbs such as look, grow, and remain, which can be replaced by a state-of-being verb

We have also learned that a helping verb is often used with a main verb to give exact meaning. Together they form a verb phrase.

### Helping Verbs

am	do	must
is	did	can
are	does	could
was	have	shall
were	has	should
be	had	will
being	may	would
been	might	

### Verb Phrases

did come  
should have been  
will be  
is seeing  
were walking  
have had

Remember? In a verb phrase, the main verb determines whether the phrase is action or linking.

Find Ezekiel 44:23 in your Bible. On the lines below, complete the verse, including all punctuation and the reference. Be sure to spell all the words correctly.

\_\_\_\_\_





\_\_\_\_\_

and cause them to discern between the unclean and the clean.

\_\_\_\_\_



Complete this chart. (Hint: For help, say the words each character is saying before writing the principal part.)

Present	Present Participle	Past	Past Participle
Today I... 	I am now... 	Yesterday I... 	In the past I have... 
(1) abolish	abolishing	<u>abolished</u>	abolished
(2) destroy	destroying	_____	destroyed
(3) improve	improving	_____	improved
(4) crucify	crucifying	_____	crucified
(5) memorize	memorizing	_____	memorized
(6) yield	yielding	_____	yielded
(7) govern	governing	_____	governed
(8) accomplish	accomplishing	_____	accomplished
(9) conserve	conserving	_____	conserved
(10) repel	repelling	_____	repelled

Complete this chart.

(11) whistle	whistling	whistled	<u>whistled</u>
(12) erupt	erupting	erupted	_____
(13) control	controlling	controlled	_____
(14) vaccinate	vaccinating	vaccinated	_____
(15) lecture	lecturing	lectured	_____
(16) decay	decaying	decayed	_____
(17) exhale	exhaling	exhaled	_____
(18) vibrate	vibrating	vibrated	_____
(19) reply	replying	replied	_____
(20) clutch	clutching	clutched	_____

Score pages 7, 8, and 9. <input type="text"/>	Correct mistakes. <input type="text"/>	Rescore. <input type="text"/>
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## Checkup

My score \_\_\_\_\_

(2 points each)

Underline the correct answer in each sentence.

- (1) The key word of a sentence is the (noun, verb, participle).
- (2) The two large classes of verbs are action and (ownership, special, linking).
- (3) Every verb has (two, three, four) principal parts.
- (4) The (present, present participle, past) form ends in "ing."
- (5) The (present, present participle, past) form of a regular verb ends in "ed."
- (6) The (present, present participle, past participle) always uses a state-of-being helping verb.
- (7) The (present, past, past participle) always uses "have," "has," or "had."
- (8) The (present participle, past, past participle) form never uses a helping verb.

Draw two lines under the verb in each sentence. On the line write "action" or "linking."

- (9) The Word of God often speaks of God's great goodness. \_\_\_\_\_
- (10) Many Psalms are an expression of David's feelings about God. \_\_\_\_\_
- (11) The Lord was both David's goodness and his fortress. \_\_\_\_\_
- (12) "The goodness of God endureth continually." (Psalm 52:1b) \_\_\_\_\_
- (13) "The earth is full of the goodness of the LORD." (Psalm 33:5b) \_\_\_\_\_
- (14) "For he . . . filleth the hungry soul with goodness." (Psalm 107:9) \_\_\_\_\_
- (15) The Israelites became prosperous due to God's goodness. \_\_\_\_\_
- (16) How has God shown His goodness to you? \_\_\_\_\_
- (17) Because of His goodness, many become believers. \_\_\_\_\_
- (18) The goodness of God leads us to repentance. \_\_\_\_\_

(1 point)

Say from memory as much of Ezekiel 44:23 as you can. Check yourself by looking up the verse in your Bible. Use your Bible to complete the verse on the lines below.

(19) \_\_\_\_\_


\_\_\_\_\_

and cause them to discern between the unclean and the clean.

\_\_\_\_\_

Please continue on the next page.






In active voice we use a form of "have" with the past participle, but ...

I am loved.  
He is loved.  
You are loved.  
She was loved.  
They were loved.  
We shall be loved.  
It has been loved.

... in passive voice we use a form of "be" with the past participle.



Underline each subject. Draw two lines under each verb. On the line indicate whether the voice of the verb is active or passive. Remember: When the verb has active voice, the subject performs the action. When the verb has passive voice, the subject receives the action.

Study these examples.

Last night the youth choir did sing in our church service.

active

My heart was blessed by their songs.

passive

### Built on an Unsteady Foundation

- (1) Have you ever visited Pisa, Italy? \_\_\_\_\_
- (2) In that town one can see a leaning tower. \_\_\_\_\_
- (3) Its construction was begun in A.D. 1173. \_\_\_\_\_
- (4) The weight of the first three stories caused the tower to tilt. \_\_\_\_\_
- (5) The five remaining stories were finally completed in 1372. \_\_\_\_\_
- (6) The 177-foot (54-meter) tower is made of marble. \_\_\_\_\_
- (7) This amazing structure was built to be a bell tower. \_\_\_\_\_
- (8) In the past the ringing bells called people to church. \_\_\_\_\_
- (9) Today, however, the bells are not used. \_\_\_\_\_
- (10) The vibration of their ringing might cause the tower to fall. \_\_\_\_\_
- (11) The slant of the tower has been measured through the years. \_\_\_\_\_
- (12) Until the mid-1970s, sinking ground yearly tilted the tower. \_\_\_\_\_
- (13) The tower is visited annually by many tourists. \_\_\_\_\_

Score pages  
23 and 24.

Correct mistakes.

Rescore.



Fill in each blank with the correct answer.

(1) We use a state-of-being helping verb with the \_\_\_\_\_ of irregular verbs.

(3 points each)

(2) We use "\_\_\_\_\_" "has," or "had" with the past participle of irregular verbs.

Fill in the blanks with the correct forms of these irregular verbs.

(1 point each blank)

Present

Present Participle

Past

Past Participle

Today I ...



I am now ...



Yesterday I ...



In the past I have ...



- (3) see
- (4) lend
- (5) wear
- (6) begin
- (7) rend
- (8) choose
- (9) quit
- (10) hurt
- (11) wake
- (12) freeze
- (13) speak
- (14) drive
- (15) rise
- (16) shake
- (17) fall

\_\_\_\_\_

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\_\_\_\_\_

The verb "be" is also an irregular verb. Say what the characters say and fill in the blanks with the correct forms.

Present

Present Participle

Past

Past Participle

(18) be

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Draw two lines under each verb. On the line at the end of each sentence, indicate whether the tense of the verb is present, past, or future.

### Justice for All

- (1) After graduation, we find Mr. Francis Scott Key in Washington, D.C.
- (2) There, he will become a respected lawyer.
- (3) One day two men, accused of treason, visited him.
- (4) They ask him to defend them in court.
- (5) Their request posed a choice requiring wisdom.
- (6) Many of Mr. Key's friends despised these two men.
- (7) His association with the two men will mar some friendships.
- (8) However, according to law, all men deserve a just trial.
- (9) What is the wise thing to do?
- (10) Mr. Key will take the matter to the Lord.
- (11) God gave direction.
- (12) Francis Scott Key will defend the two men.
- (13) In spite of difficulty, he chooses to stand for right.
- (14) As a result, people greatly admire his discernment.
- (15) Will you ask God to help you make wise choices?
- (16) Only Biblical principles provide guidelines for life's decisions.

Say from memory as much of Ezekiel 44:23 as you can. Check yourself by looking up the verse in your Bible. Use your Bible to complete the verse on the lines below.

- (17) \_\_\_\_\_  
 \_\_\_\_\_  
 and cause them to discern between the unclean and the clean.

Score this page:

Correct mistakes.

Rescore.



Checkup

My score

(3 points each)

List the three simple tenses of a verb.

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_

Fill in the blanks with the correct answers.

- (4) The \_\_\_\_\_ principal part is used to form the present and future tenses.
- (5) The \_\_\_\_\_ principal part is used to form the past tense.

Draw two lines under each verb. On the line at the end of the sentence, indicate whether the tense of the verb is present, past, or future.

- (6) Francis Scott Key's childhood shaped his destiny.
- (7) As a child he learned to read the Bible.
- (8) What will the future hold for this promising young man?
- (9) God directs him to become a lawyer.
- (10) The young man studies hard.
- (11) Eventually he will marry Mary Tayloe Lloyd.
- (12) In Washington, D.C., Mr. Key became a respected lawyer.
- (13) One day two men ask him to defend them in court.
- (14) What is the wise thing to do?
- (15) Mr. Key will take the matter to the Lord.
- (16) God gave direction.
- (17) Mr. Key will defend the two men.
- (18) All men deserve a just trial.

(1 point)

On the lines below, complete the PACE Scripture from memory.

(19) \_\_\_\_\_

and cause them to discern between the unclean and the clean.



## My Goals

To learn these spelling words:

mind	thigh
lyre	cite
hike	high
quit	sigh
quite	film
wrist	scribe
zinc	strict
spy	knife
itch	aisle
smear	shy
fierce	slick
guide	

solar	vivid
wisdom	cluster
lobster	ignite
sober	linger
legion	suffer
tablet	motive
cozy	lumber
habit	silent
bonus	diet
minor	normal
item	notice
humid	

additional	linen
administer	original
difficulty	twine
appetite	religion
arrival	require
assignment	testimony
candidate	empty
charity	
finally	
committee	
consistency	
majority	

To learn the *i* and *ī* sound spellings

To learn about homonyms

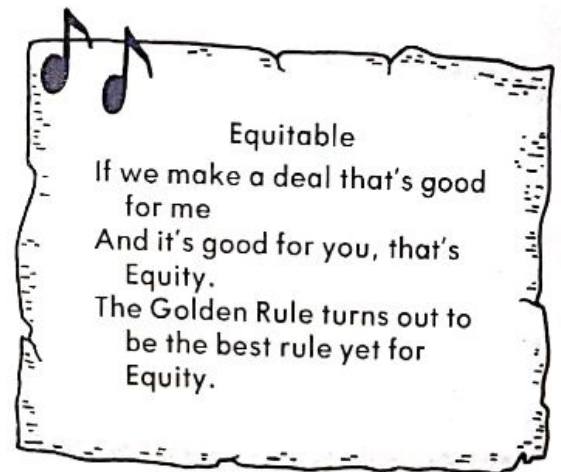
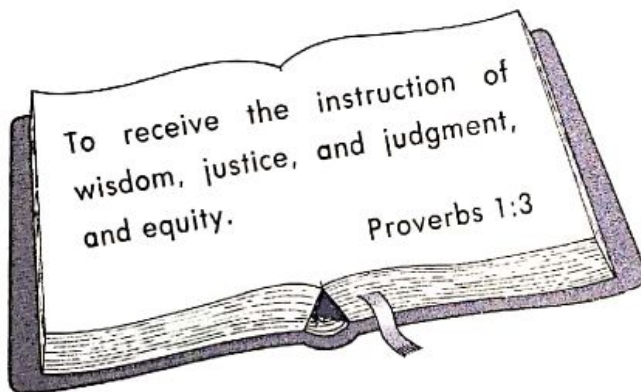
To learn syllable division rules

To learn about *e* sound spellings

To learn to spell some words that are often misspelled

To learn to be fair with and show justice to others, according to God's law—to be equitable

Learn this Scripture Verse



### Symbol and Sound Chart

ā = glad	ī = sit	ōō = tool	oi = coin	zh = Asia
ā = save	ī = kind	ū = cup	ou = out	ē = <u>a</u> in above
ā = fair	ō = box	ū = use	sh = she	ē = <u>e</u> in the
ā = barn	ō = go	ch = much	th = this, thin	ē = <u>i</u> in easily
ē = best	ō = soft, order	kw = queen	ūr = burn	ē = <u>o</u> in lemon
ē = bee	ōō = look	ng = song	z = has	ē = <u>u</u> in Jesus

1

Supervisor initial \_\_\_\_\_

The student will need his dictionary to complete this PACE.



Read each spelling word and its definition. Notice that each word has a different definition than on previous pages. Copy the sentence.

- (10) **guide** (gīd) v. to show the way  
Let the wisdom of God's Word guide your life.

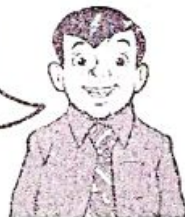
- (11) **slick** (slīk) n. an oily film covering a portion of water  
An oil slick causes ocean water to be polluted.

- (12) **knife** (nīf) v. to cut through something  
Gracefully, the otter did knife through the water.



- (13) **scribe** (skrīb) v. to mark or cut  
Can you scribe a beautiful design in wood?

Homonyms (hōm'ə-nīmz)  
are words that sound  
alike but have  
different spellings  
and meanings.




cite v. to praise; to refer to  
site n. where something is or has been located  
sight n. the ability to see  
aisle n. a passageway between seats  
isle n. a small island  
I'll contraction I will or I shall

Learn the definition of each homonym; then underline the correct homonyms in the story below.


(14-23) "Grandfather," asked Pudge, "can you (cite, site, sight) for me a famous revival?"

"I certainly can," replied Grandfather. "It took place on an (aisle, isle, I'll) in the Outer Hebrides of Scotland. In bringing revival, God used two elderly women. One had crippled hands, the other had lost her (cite, site, sight), but (aisle, isle, I'll) tell you, both knew how to pray powerfully and receive answers from God. Meanwhile, at the (cite, site, sight) of an old barn, the pastor and deacons were praying nightly. After they had experienced personal revival, God sent a missionary to their town. The first night he preached to about 300 people. As the (aisle, isle, I'll) cleared, he went outside and found the people had not left, but rather, more had come. What a (cite, site, sight)! (Aisle, Isle, I'll) tell you, however, that that was only the beginning. God brought revival to that (aisle, isle, I'll) in the Outer Hebrides and several (cites, sites, sights) in Scotland. Let's pray God will bring an awakening here, also."





As illustrated by our spelling words, the ī sound can be spelled y, i, or ai



The ī sound can also be spelled ie, uy, or oi.

pie  
buy  
choir

Two vowels spelling one vowel sound is called a vowel digraph.

This wise saying illustrates all the spellings of the ī sound.

Do not buy the lie  
that wide aisles  
and fine choirs  
sanctify a church.

From the information given above, fill in the blanks with the correct answers.

- (1) The ī sound can be spelled \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.
- (2) A vowel digraph is \_\_\_\_\_.
- (3) Write and memorize the wise saying that illustrates the spellings of the ī sound.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

From pages 2, 3, 5, and 6, choose and write the spelling words that have the ī sound.

- |           |            |            |
|-----------|------------|------------|
| (4) _____ | (9) _____  | (14) _____ |
| (5) _____ | (10) _____ | (15) _____ |
| (6) _____ | (11) _____ | (16) _____ |
| (7) _____ | (12) _____ | (17) _____ |
| (8) _____ | (13) _____ |            |
- To be just is a must.


Underline the silent letter or letters in each spelling word listed below.

- |            |            |            |           |
|------------|------------|------------|-----------|
| (18) knife | (20) thigh | (22) aisle | (24) high |
| (19) sigh  | (21) wrist | (23) guide |           |


Write all the spelling words that end with the ī sound.

- |            |            |            |
|------------|------------|------------|
| (25) _____ | (27) _____ | (29) _____ |
| (26) _____ | (28) _____ |            |






As illustrated by our spelling words, the *ī* sound can be spelled i, ea, or ie.



The *ī* sound can also be spelled e, ee, ui, u, or y.

pretty  
been  
build  
busy  
hymn

This wise saying illustrates all the spellings of the *ī* sound.



Having been redeemed from guilt, men and women need not fear the fierce flame of the abyss, but enter into the King's business.

From the information given above, fill in the blanks with the correct answers.

(1) The *ī* sound can be spelled \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.

(2) Write and memorize the wise saying that illustrates the spellings of the *ī* sound.

From pages 2, 3, 5, and 6, choose and write the spelling words that have the *ī* sound.

(3) \_\_\_\_\_

(7) \_\_\_\_\_

(11) \_\_\_\_\_

(4) \_\_\_\_\_

(8) \_\_\_\_\_

In "quit" and "quite,"  
qu sounds like \_\_\_\_\_.

(5) \_\_\_\_\_

(9) \_\_\_\_\_

(6) \_\_\_\_\_

(10) \_\_\_\_\_

Find Proverbs 1:3 in your Bible. On the lines below, write the verse, including all punctuation and the reference. Be sure to spell all the words correctly.

(12) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Score pages  
7, 8, 9, and 10.

Correct mistakes.

Rescore.



# Checkup

My score \_\_\_\_\_

On a separate sheet of paper, write each spelling word three times. Score the words very carefully. Each word must be spelled correctly all three times to score one point. (1 point each)

- |           |            |             |             |            |
|-----------|------------|-------------|-------------|------------|
| (1) mind  | (6) wrist  | (11) fierce | (16) sigh   | (20) knife |
| (2) lyre  | (7) zinc   | (12) guide  | (17) film   | (21) aisle |
| (3) hike  | (8) spy    | (13) thigh  | (18) scribe | (22) shy   |
| (4) quit  | (9) itch   | (14) cite   | (19) strict | (23) slick |
| (5) quite | (10) smear | (15) high   |             |            |

(24) Write the wise saying that illustrates the spellings of the *i* sound. (3 points each)

---



---



---

(25) Write the wise saying that illustrates the spellings of the *i* sound.

---



---



---

From the three choices in parentheses, underline the correct phonetic spelling for each word.

- (26) Let's take an imaginary (hīkē, hīk, hīk) through the jungle.
- (27) In a jungle one needs a (gīd, gūdē, gīd) to cut a path with his long knife.
- (28) Keep in (mīn, mīnd, wīnd) that a jungle is not all fun and games!
- (29) For instance, there are mosquitoes which will make you (īsh, ītsh, īch).
- (30) Many monkeys (spī, spī, spē) on us from among the lush, tropical vegetation.
- (31) Any moment you may see a (fārs, fīrs, fīrs) tiger.
- (32) However, he is usually too (chī, shī, shī) to be seen.
- (33) That was (quīt, kwīt, kwīt) an exciting trip, wasn't it?



(1 point)

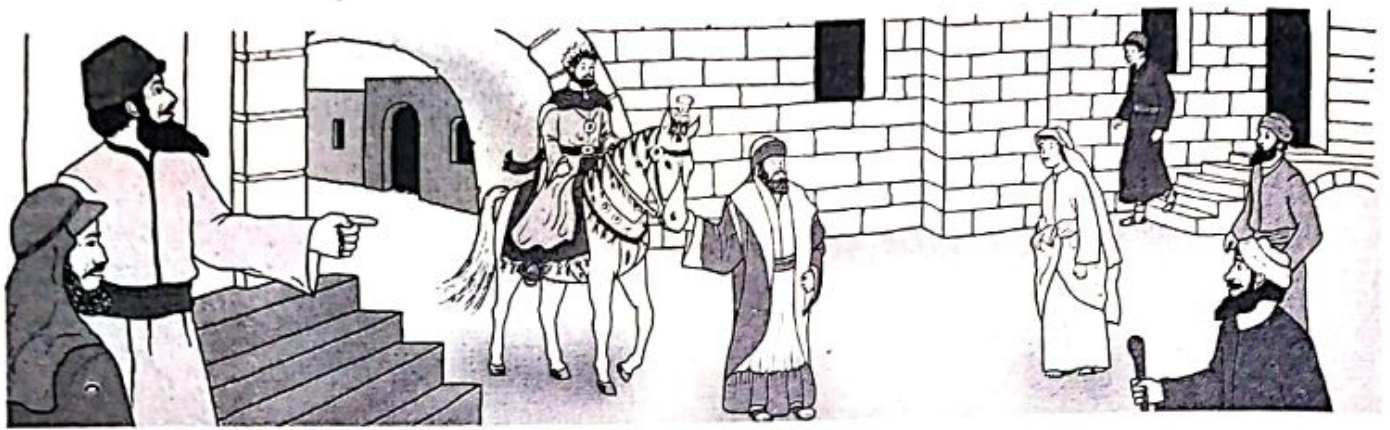
Say from memory as much of Proverbs 1:3 as you can. Check yourself by looking up the verse in your Bible. Using your Bible, copy the verse on the lines below.

(34) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_





### Esther Seeks Equity

From your Bible, read Esther 6 and 7.

"It's just not fair!" thought Haman as he sat in his house that day. He was so upset, in fact, that he had covered his head as if mourning. He didn't want to see anyone.

Just yesterday, he had planned to have Mordecai, the Jew whom he so hated, hanged. Haman had gone so far as to have a gallows (a wooden frame for executing someone) built for that very purpose. How could he have known that the king would discover that Mordecai had once saved the king's life and had received no reward? Imagine! He, Haman, had been forced to bring Mordecai in honor before the people. Now the king had actually honored Mordecai more than Haman.

On each blank write who said the quote. (Read carefully. The quotes are not in Biblical order.)

(1) "Let my life be given me at my petition, and my people at my request." \_\_\_\_\_

(2) "Thou shalt not prevail against him [Mordecai], but shalt surely fall before him." \_\_\_\_\_

(3) "Behold also, the gallows fifty cubits high, which Haman had made for Mordecai." \_\_\_\_\_

(4) "Thus shall it be done to the man whom the king delighteth to honour." \_\_\_\_\_

(5) "Hang him thereon." \_\_\_\_\_

Complete the key verse of the book of Esther as found in Esther 4:14.

(6) "For if thou altogether holdest thy peace at this time, then shall there enlargement and deliverance arise to the Jews from another place; but thou and thy father's house shall be destroyed: and \_\_\_\_\_

"



# Syllable Division

When two consonants come between two vowels, divide between the two consonants. (Remember: "y" can be a vowel.)



butter  
fifty

When one consonant comes between two vowels, divide before the consonant if the first vowel has a long sound.



meter  
spider

When one consonant comes between two vowels, divide after the consonant if the first vowel has a short sound.



rapid  
comet

A vowel by itself may form one syllable. We usually do not divide a consonant blend.



about  
response

Following the rules for syllable division given above, divide these words into syllables.

(1) suffer

(7) linger

(13) humid

(19) legion

(2) notice

(8) bonus

(14) solar

(20) tablet

(3) motive

(9) ignite

(15) habit

(21) sober

(4) normal

(10) minor

(16) wisdom

(5) lumber

(11) vivid

(17) cozy

The "g" in "legion" has the sound of \_\_\_\_\_.

(6) silent

(12) item

(18) lobster

Two of our spelling words do not follow the rules given above. Find these words in your dictionary and divide them into syllables.

(22) cluster

The "st" here is not sounded together as a blend.

(23) diet

The "i" and "e" spell two sounds.

Find these three verses in your Bible and read them; then underline the reference of the verse that teaches us to be equitable.

(24) Proverbs 17:25

Colossians 4:1

Isaiah 53:1

Score pages  
19, 20, and 21.

Correct mistakes.

Rescore.



# Checkup

My score \_\_\_\_\_

On a separate sheet of paper, write each spelling word three times. Score the words very carefully. Each word must be spelled correctly all three times to score one point. (1 point each)

- |             |            |              |             |             |
|-------------|------------|--------------|-------------|-------------|
| (1) solar   | (6) tablet | (11) item    | (16) linger | (20) silent |
| (2) wisdom  | (7) cozy   | (12) humid   | (17) suffer | (21) diet   |
| (3) lobster | (8) habit  | (13) vivid   | (18) motive | (22) normal |
| (4) sober   | (9) bonus  | (14) cluster | (19) lumber | (23) notice |
| (5) legion  | (10) minor | (15) ignite  |             |             |

Complete these rules for dividing words into syllables.

(3 points each)

(24) When two consonants come between two vowels, divide \_\_\_\_\_ the two consonants.

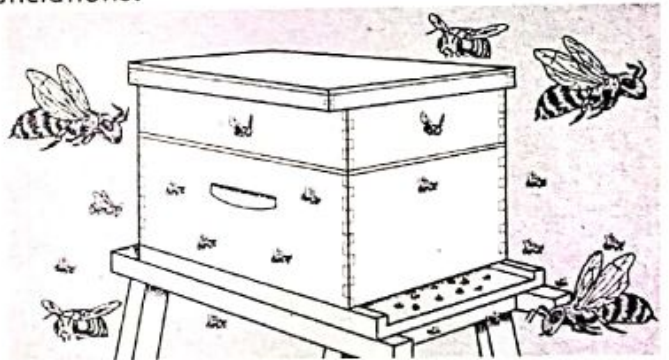
(25) When one consonant comes between two vowels, divide \_\_\_\_\_ the consonant if the first vowel has a long sound.

(26) When one consonant comes between two vowels, divide \_\_\_\_\_ the consonant if the first vowel has a short sound.

(27) A vowel by itself may form \_\_\_\_\_ syllable. We usually do not divide a \_\_\_\_\_ blend.

Match these spelling words with their phonetic pronunciations.

- |                    |               |
|--------------------|---------------|
| _____ (28) linger  | (A) klūs' iər |
| _____ (29) cozy    | (B) lē' jən   |
| _____ (30) legion  | (C) nō' tīs   |
| _____ (31) tablet  | (D) kō' zī    |
| _____ (32) notice  | (E) līng' gər |
| _____ (33) cluster | (F) tāb' līt  |



(1 point)

Say from memory as much of Proverbs 1:3 as you can. Check yourself by looking up the verse in your Bible. Using your Bible, copy the verse on the lines below.

(34) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

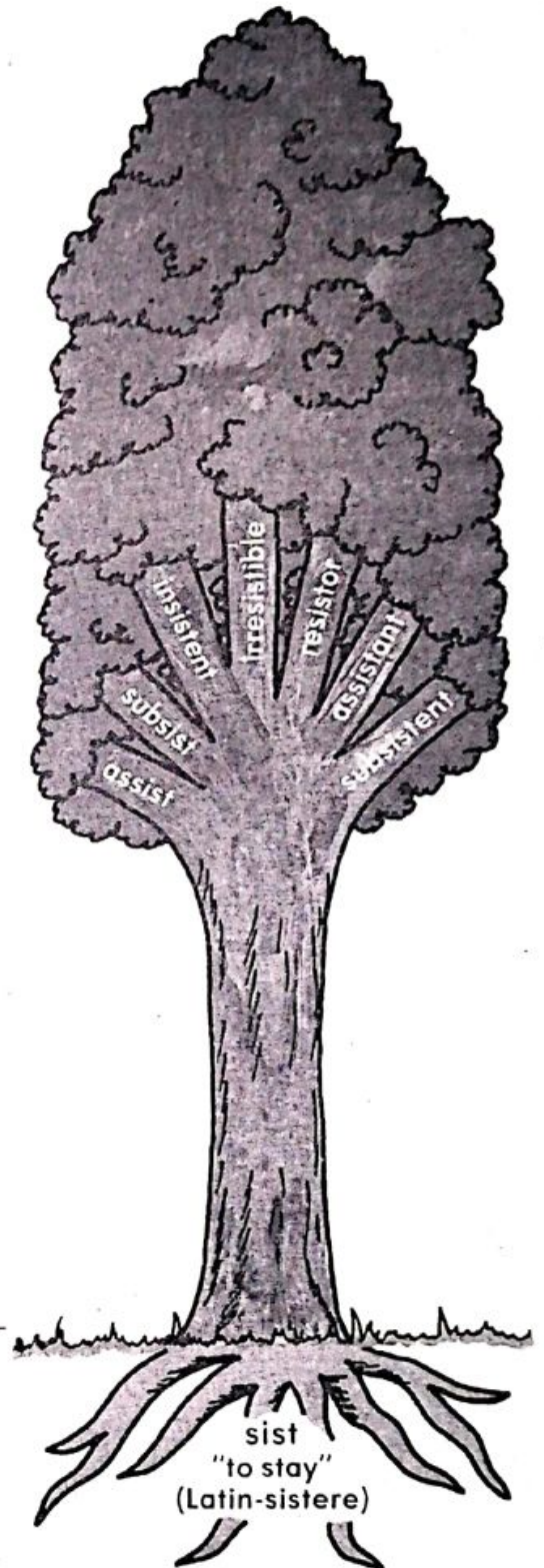
Please continue on the next page.



D13 p. 32-34  
+ Check Up

Add the root word "sist" (meaning "to stay") to these prefixes and suffixes.

- (1) as + \_\_\_\_\_ = \_\_\_\_\_
- (2) as + \_\_\_\_\_ + ance = \_\_\_\_\_
- (3) as + \_\_\_\_\_ + ant = \_\_\_\_\_
- (4) as + \_\_\_\_\_ + less = \_\_\_\_\_
- (5) con + \_\_\_\_\_ = \_\_\_\_\_
- (6) con + \_\_\_\_\_ + ence = \_\_\_\_\_
- (7) con + \_\_\_\_\_ + ency = \_\_\_\_\_
- (8) con + \_\_\_\_\_ + ory = \_\_\_\_\_
- (9) de + \_\_\_\_\_ = \_\_\_\_\_
- (10) de + \_\_\_\_\_ + ive = \_\_\_\_\_
- (11) sub + \_\_\_\_\_ = \_\_\_\_\_
- (12) sub + \_\_\_\_\_ + ent = \_\_\_\_\_
- (13) in + \_\_\_\_\_ = \_\_\_\_\_
- (14) in + \_\_\_\_\_ + ence = \_\_\_\_\_
- (15) in + \_\_\_\_\_ + ent = \_\_\_\_\_
- (16) per + \_\_\_\_\_ = \_\_\_\_\_
- (17) per + \_\_\_\_\_ + ent = \_\_\_\_\_
- (18) per + \_\_\_\_\_ + ency = \_\_\_\_\_
- (19) re + \_\_\_\_\_ = \_\_\_\_\_
- (20) ir + re + \_\_\_\_\_ + ible = \_\_\_\_\_
- (21) re + \_\_\_\_\_ + ant = \_\_\_\_\_
- (22) re + \_\_\_\_\_ + or = \_\_\_\_\_
- (23) re + \_\_\_\_\_ + ive = \_\_\_\_\_



(24) What does the root word "sist" mean? \_\_\_\_\_



# Checkup

My score \_\_\_\_\_  
(2 points each)

On a separate sheet of paper, write each spelling word three times. Score the words very carefully. Each word must be spelled correctly all three times to score two points.

- |                |                |                  |               |                |
|----------------|----------------|------------------|---------------|----------------|
| (1) additional | (5) arrival    | (9) finally      | (13) linen    | (17) require   |
| (2) administer | (6) assignment | (10) committee   | (14) original | (18) testimony |
| (3) difficulty | (7) candidate  | (11) consistency | (15) twine    | (19) empty     |
| (4) appetite   | (8) charity    | (12) majority    | (16) religion |                |

Using the spelling words and definitions you have already learned, fill in each blank with the correct answer.

(20) Becky is helping Mother prepare for the \_\_\_\_\_ of several guests.

(21) Her first \_\_\_\_\_ is to set the table.

(22) Mother has chosen her best \_\_\_\_\_ tablecloth for the occasion.

(23) The silver will \_\_\_\_\_ polishing, so Becky quickly begins that task.

(24) Next, she fills the \_\_\_\_\_ salt and pepper shakers.

(25) From the kitchen, drift aromas that stir Becky's \_\_\_\_\_.

(26) Having guests for dinner is one way the McMercys show \_\_\_\_\_.

(27) Pure \_\_\_\_\_ is demonstrated by showing kindness to others.

(28) This should be the \_\_\_\_\_ of every Christian.

(29) It may mean \_\_\_\_\_ work on our part, but it glorifies God.

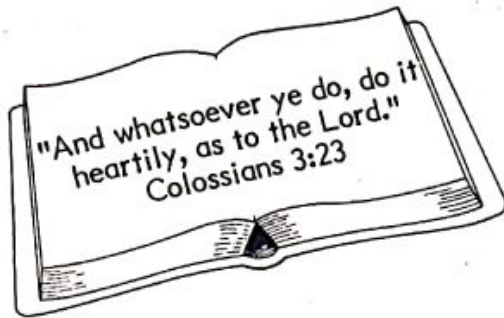
(30) \_\_\_\_\_, the guests arrive and enjoy a lovely evening of fellowship.

On the lines below, write the PACE Scripture from memory.

- (31) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## VERSE



## DILIGENT

There are enemies around, so be diligent.

Life is like a battleground so be diligent.

Things like Laziness and Pride will attack from ev'ry side,

So be watchful ev'ry day, be diligent.

## MY GOALS

- To make equations from written statements. (pp. 2-3)
- To solve written problems. (pp. 2-3)
- To solve problems using formulas as equations. (pp. 6-7)
- To make new formulas from old formulas. (pp. 10-16)
- To solve percentage problems. (pp. 28-37)
- To learn to finish every task because it is an assignment from the Lord. (pp. 1, 2, 3, 10, 26, 39)

## VOCABULARY

**decimal fraction.** A number containing both a decimal and fraction.  $.37\frac{1}{2}$

A formula that is used in a previous PACE is  $d = rt$ . Do you remember that this formula is used to find the distance when the rate of speed and time elapsed are known? This formula is stated: "To find the distance traveled, multiply the rate of speed by the time of travel." When  $d$  = distance,  $r$  = rate of speed, and  $t$  = time of travel, the formula is written as  $d = rt$ .

### Complete the activity.

- (1) Another formula that is used is stated: "The area of a rectangle is found by multiplying the length times the width." Write this statement in formula form. \_\_\_\_\_

### Write equations for the statements below.

- (2) To find the perimeter of a triangle, the sum of the lengths of the sides is found.

\_\_\_\_\_

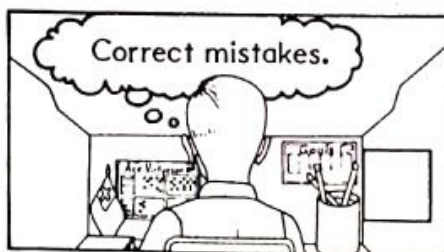
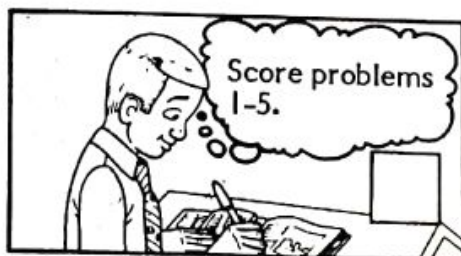
- (3) To find the circumference of a circle, multiply pi times the diameter. \_\_\_\_\_



(4) To find the area of a circle, multiply  $\pi$  times the radius squared.

(5) To find the volume of a rectangular solid, multiply the length times the width times the height of the object.

And whatsoever ye do, do it heartily, as to the Lord.  
Colossians 3:23



The solution to a problem may be stated in equation form. For example, four times a number is equal to sixteen. What is the number?

To solve this statement, let a letter represent the number we are trying to find. (Any letter may be used but for simplification let's use 'x'.)

Let  $x$  = number

Then  $4x = 16$  (solving for  $x = 4$  gives the number)

If seventeen is added to three times a certain number, the sum is thirty-two. What is the number?

Let  $x$  = number

Then  $3x + 17 = 32$  (solving for  $x = 5$  gives the answer)

**On the blank, write equations for the following statements.**

(6) Three times a number equals twenty-one. \_\_\_\_\_

(7) A number plus eight equals twenty-seven. \_\_\_\_\_

(8) A number minus seventeen equals four. \_\_\_\_\_

(9) Four times a number plus five equals thirty-nine. \_\_\_\_\_



P3 #43-51 plus check up

Let's take statements that are part of a problem and solve for the value of the unknown quantity.

Reginald is thinking of a number. If he adds 18 to it, the sum is 81. Write an equation and find the value of the number.

let  $x$  = number

then  $x + 18 = 81$

$x = 81 - 18$

$x = 63$

**Write an equation and solve the problems for the unknown.**

- (43) If 4 is added to a number and the sum is 12, what is the number?

$x =$  \_\_\_\_\_

- (44) Three times a number equals 75. What is the number?

$x =$  \_\_\_\_\_

- (45) If 13 is subtracted from a number, the difference is 44. What is the number?

$x =$  \_\_\_\_\_

- (46) One third of a number is 13. What is the number?

$x =$  \_\_\_\_\_



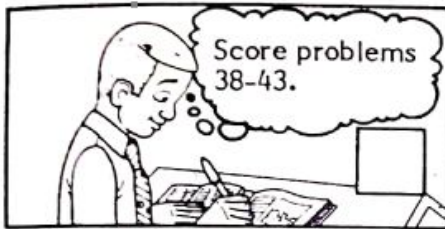
Complete this verse.

(43)

\_\_\_\_\_ , \_\_\_\_\_

as to the Lord \_\_\_\_\_

Colossians 3:23



Solve these problems.

- (44) The area of a triangle is 48 and  $b = 8$ . What is the value of  $a$ ?

\_\_\_\_\_

- (45) Find the area of a triangle, if  $a = 16$  and  $b = 8$ .

\_\_\_\_\_





Another way of expressing the same problem is as follows:

\_\_\_\_\_ % of 8 is 2 (compare this with the first problem above).

The answer is determined in the same manner.

$$\frac{2}{8} = \frac{1}{4} = \frac{25}{100} = 25\%$$

Calculate the percent in these problems.

(107) \_\_\_\_\_ % of 5 is 3

(108) \_\_\_\_\_ % of 15 is 5

(109) \_\_\_\_\_ % of 60 is 20

(110) \_\_\_\_\_ % of 200 is 100

(111) \_\_\_\_\_ % of 1,000 is 350

(112) \_\_\_\_\_ % of 450 is 300

(113) \_\_\_\_\_ % of 1,200 is 300

(114) \_\_\_\_\_ % of 175 is 140

(115) \_\_\_\_\_ % of 56 is 49

(116) \_\_\_\_\_ % of 60 is 50

(117) \_\_\_\_\_ % of 96 is 12

(118) \_\_\_\_\_ % of 64 is 40

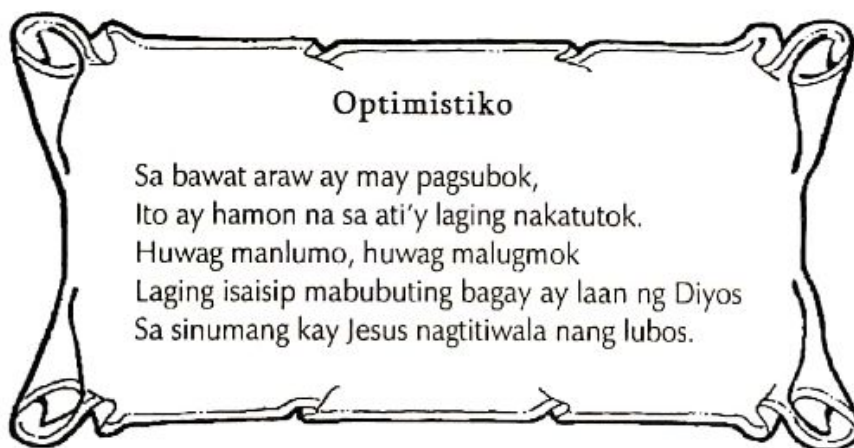
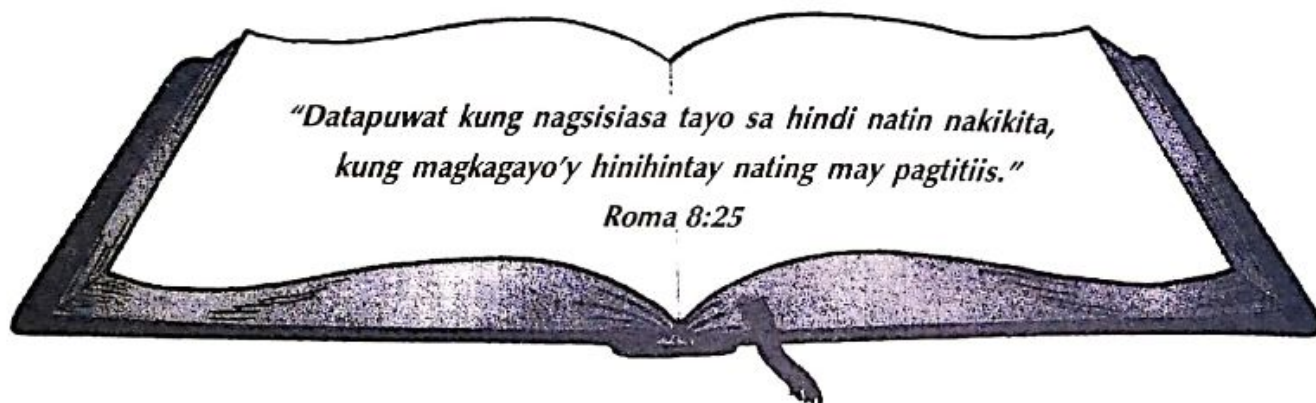


Basahin sa iyong superbisor.

### Ang Aking Layunin

Mabigkas at mabaybay nang wasto ang mga salita sa wikang Filipino  
 Makapagbigay ng panumbas sa mga salitang hiram  
 Makabuo ng mga salita sa pamamagitan ng mga salitang-ugat  
 Makapagpahayag sa pamamagitan ng wastong paggamit ng mga salitang may klaster  
 Masuri ang mga kaanyuan ng pantig at karagdagang kayarian sa pagbuo ng mga salita  
 Makapagpaliwanag ng kahulugan ng mga idyoma at magamit ito sa mga pangungusap  
 Malinang ang pagiging optimistiko

### Sauluhin Ang Talata



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1 Lagda ng superbisor \_\_\_\_\_

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## Ang Pantig

Sa araling ito, matututun ang dating kayarian o kaanyuan ng pantig ay nadagdagan ng lima. Dahil dito, mayroon na tayong siyam na kayarian ng pantig.

Ang pantig ay isang patuloy na yunit ng bigkas ng pananalita na binubuo ng isang sentro ng malinaw na tunog (patinig) at may kalakip na isa o mahigit pang tunog (katinig). Ito ay nagtataglay ng kombinasyon ng isang patinig at isa o dalawang katinig.



Bawat bigkas ng bibig ay laging may isang patinig.

Halimbawa: *ta-yo*  
*si-pag*

*a-ral*  
*ak-lat*

*la-gi*  
*a-ak-yat*

Matatandaan na sa mga unang aralin sa Wikang Filipino, may apat na kayarian. Ito ay ang mga sumusunod na matutukoy sa pamamagitan ng paggamit ng mga simbulong **K** para sa Katinig at **P** para sa Patinig.

### Unang Kayarian

P  
KP  
PK  
KPK

### Halimbawa

*a-ga*  
*la-kad*  
*is-la*  
*han-dog*

### Dagdag na Kayarian

KKP  
PKK  
KKPK  
KKPKK

*pla-no*  
*eks-per-to*  
*tran-saks-yon*  
*trans-por-tas-yon*

Ang mga kayariang ito ay maaaring madagdagan pa sa pamamagitan ng mga salitang hiram na ginawang maramihan tulad ng kards (KPKKK) o sports (KKPKKK).

### Punan ang mga patlang.

"\_\_\_\_\_ kung nagsisiasa tayo sa hindi natin nakikita, kung magkagayo'y hinihintay nating may pagtitiis." Roma 8:25



## Ang Pagpapantig

Ang **pagpapantig** ay paraan ng paghahati ng mga salita.



Pansinin sa mga sumusunod na halimbawa na kapag may magkasunod, dalawa o higit pang patinig sa inisyal, midyal at pinal na posisyon ng salita, hiwalay ito ng mga pantig.

Halimbawa:

<i>u<u>u</u>po</i>	<i>u-u-po</i>
<i>na<u>a</u>wa</i>	<i>na-a-wa</i>
<i>bub<u>u</u>o</i>	<i>bu-bu-o</i>

May katutubong salita na may magkasunod na katinig. Ang una ay kasama sa patinig na sinusundan. Sa patinig naman nakasunod ang ikalawa.

Halimbawa:

<i>suk<u>s</u>ok</i>	<i>suk-sok</i>
<i>pan<u>t</u>as</i>	<i>pan-tas</i>
<i>gin<u>t</u>o</i>	<i>gin-to</i>

Paano naman pinapantig ang mga salitang hiram na nadagdag sa talasalitaang Filipino?

1. Karaniwang kasama sa kasunod na patinig ang magkasunod na dalawang katinig.

Halimbawa : *glorya*      *glo-rya*                      *kapwa*      *ka-pwa*

2. Kasama sa patinig na sinusundan ang unang dalawang magkakasunod sa tatlong katinig, ang huli ay sa patinig na kasunod.

Halimbawa: *kostumbre*      *kos-tum-bre*                      *simple*      *sim-ple*

3. Kasama sa patinig na sinusundan ang unang dalawa sa apat na katinig na magkakasunod, ang huling dalawa ay sa patinig na kasunod.

Halimbawa: *ekstra*                      *eks-tra*

Ano ang mga tuntuning sinusunod sa pag-uulit ng pantig?

1. Ang patinig lamang ang inuulit kung ang unang tunog sa salitang-ugat ay patinig.

Halimbawa: *a-bot*                      *a-a-bot*

Kahit na may unlapi ang salita, ito pa rin ang susunding tuntunin.

Halimbawa: *mag-a-bot*                      *mag-a-a-bot*

2. Ang katinig at ang kasunod na patinig lamang ang inuulit kung ang unang pantig ng salitang-ugat ay nagsisimula sa katinig-patinig.

Halimbawa: *ba-ba*                      *ba-ba-ba*                      *mag-ba-ba-ba*

3. Ang unang katinig at patinig ay inuulit kapag ang unang pantig ng salitang-ugat ay may klaster na katinig.

Halimbawa: *plaster*                      *pa-plas-te-ran*  
*trabaho*                      *mag-ta-tra-ba-ho*



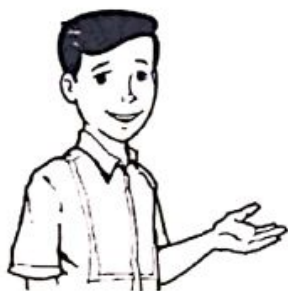
## Kumbinasyon ng Dalawang Salitang-Ugat

Ang mga idyoma sa Filipino ay katumbas ng 'idioms' sa gramatikong Ingles. Ito ay ang pagtatambal ng dalawang magkaibang salita na nagkakaroon ng ikatlong kahulugan.



Sundan ang mga sumusunod na halimbawa:

<i>kayod-kalabaw</i>	-	<i>todong trabaho</i>
<i>lakad-pagong</i>	-	<i>mabagal lumakad</i>
<i>kain-sundalo</i>	-	<i>mabilis kumain</i>



Ang pinalawak na salita ay mga salitang kumbinasyon ngunit ang sariling kahulugan ay nananatili at nakadaragdag sa kabuuan ng pinagtambal na salita.

Narito ang ilang mga halimbawa:

<i>taong-bahay</i>	=	tagabantay ng bahay
<i>dalagang-nayon</i>	=	dalagang taga-nayon

Pagtambalin.

- |                              |                  |
|------------------------------|------------------|
| _____ 1. malaki ang kita     | a) isdang-tabang |
| _____ 2. pulubing tao        | b) madaling-araw |
| _____ 3. maramdamin          | c) balat-sibuyas |
| _____ 4. mag-uumaga na       | d) hampas-lupa   |
| _____ 5. isdang mula sa ilog | e) tubong-lugaw  |

Punan ang mga patlang ng talata.

"\_\_\_\_\_ kung \_\_\_\_\_ tayo sa hindi \_\_\_\_\_, kung \_\_\_\_\_  
\_\_\_\_\_ nating may pagtitiis."

Roma 8:25



## Ang Walang Alinlangang Pagsunod ni Abraham

Genesis 22:1-19

At nangyari pagkatapos ng mga bagay na ito, na sinubok ng Dios si Abraham, at sinabi niya, "Narito ako." At kanyang sinabi, "Kunin mo ngayon ang iyong bugtong na anak na si Isaac, na iyong minamahal at pumaroon ka sa lupain ng Moria: at ihain mo siya roong handog na susunugin sa ibabaw ng isa sa mga bundok na aking sasabihin sa iyo."

At si Abraham ay bumangong maaga, at inihanda ang kaniyang asno, at ipinagsama ang dalawa sa kaniyang mga alila, at si Isaac na kaniyang anak at nagsibak ng kahoy, para sa haing susunugin, at bumangon at naparoon sa dakong sinabi sa kanya ng Dios.

Nang ikatlong araw ay itiningin ni Abraham ang kaniyang mga mata at natanaw niya ang dakong yaon sa malayo. At sinabi ni Abraham sa kaniyang alila, "Maghintay kayo rito sampu ng asno, at ako at ang bata ay paroroon doon; at kami ay sasamba, at babalikan namin kayo." At kinuha ni Abraham ang kahoy ng handog na susunugin, at ipinasan kay Isaac na kaniyang anak; apoy at ang sundang; at sila'y kapuwa yumaong magkasama.

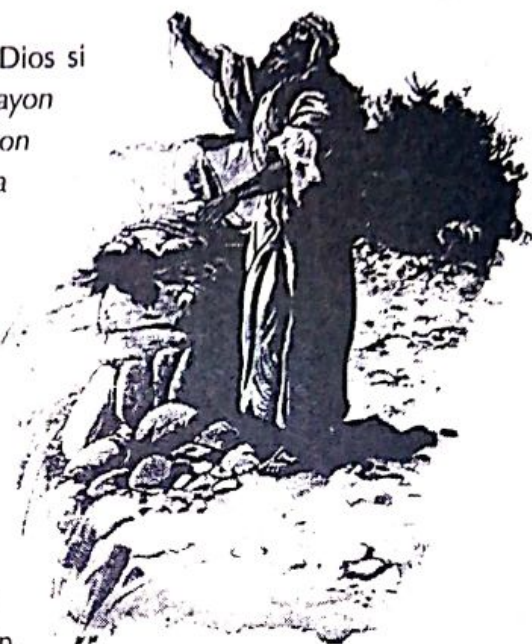
At nagsalita si Isaac kay Abraham na kaniyang ama na sinabi, "Ama ko: at kaniyang sinabi, Narito ako, anak ko. At sinabi, Narito ang apoy at ang kahoy, ngunit saan naroon ang korderong pinakahandog at susunugin?" At sinabi ni Abraham, "Dios ang maghahanda ng korderong pinakahandog na susunugin, anak ko," ano pa't sila'y kapuwa yumaong magkasama.

At sila'y dumating sa dakong kaniya'y sinabi ng Dios; at nagtayo si Abraham doon ng isang dambana, at inayos ang kahoy, at tinalian si Isaac na kaniyang anak at inilagay sa ibabaw ng dambana, sa ibabaw ng kahoy. At iniunat ni Abraham ang kaniyang kamay at hinawakang sundang upang patayin ang kaniyang anak. At tinawag siya ng anghel ng Panginoon mula sa langit, at sinabi, "Abraham, Abraham." At kaniyang sinabi, "Narito ako." At sa kaniya'y sinabi, "Huwag mong buhatin ang iyong kamay sa bata, o gawan man siya ng anoman: sapagka't talastast ko ngayon, na ikaw ay natatakot sa Dios, sa paraang hindi mo itinanggi sa akin ang iyong anak, ang iyong bugtong na anak."

At itiningin ni Abraham ang kaniyang mga mata, nagmalas, at narito, ang isang tupang lalake, sa dakong likuran niya nahuli sa dawag sa kaniyang mga sungay: at pumaroon si Abraham, at kinuha ang tupa, at siya'y inihandog na handog na susunugin na inihalili sa kaniyang anak. At ipinanganlan ni Abraham ang dakong yaon, ng Jehova-jireh gaya ng kasabihan hanggang sa araw na ito: Sa bundok ng Panginoon ay maihahanda.

At tinawag ng anghel ng Panginoon si Abraham na ikalawa mula sa langit. At sinabi, "Sa aking sarili ay sumumpa ako, anang Panginoon, sapagka't ginawa mo ito, at hindi mo itinanggi sa akin ang iyong anak, ang iyong bugtong na anak. Na sa pagpapala ay pagpapalain kita, at sa pagpaparami ay pararamihin ko ang iyong binhi, na gaya ng mga bituin sa langit, at gaya ng mga buhangin sa baybayin ng dagat; at kakamtin ng iyong binhi ang pintuang-bayan ng kaniyang mga kaaway. At pagpapalain sa iyong binhi ang lahat ng bansa sa lupa: sapagka't sinunod mo ang aking tinig."

At gayo'y nagbalik si Abraham sa kaniyang mga alila, at nagsitindig at sama-samang nagsiparoon sa Beer-seba; at tumahan si Abraham sa Beer-seba.





# ASIAN HISTORY 3 - 1111

## Instructions

1. Become familiar with the vocabulary at the beginning of each section.
2. Scan through the entire PACE to obtain an overview of the content.
3. Then thoroughly read the PACE text completing activities that follow.



### Memory Verse

*"And they shall teach my people the difference between the holy and profane, and cause them to discern between the unclean and the clean."*

*Ezekiel 44:23*

### Discerning

Having the insight and sympathetic understanding into a difficult situation and being able to make an accurate judgment.

## ANCIENT CIVILIZATION

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## Ancient Civilization

Carefully read these pages. The Objectives tell you what you should learn in this PACE. The Vocabulary section gives the meanings of all terms introduced in this PACE.

### Objectives

When you have successfully completed this PACE, you should be able to:

To describe the world before and after man sinned

To understand the effects of sin to mankind and the earth

To explain and appreciate ancient civilization in the light of the present



### VOCABULARY

**conception** *n.* (kən-'sep-shən) the formation of a zygote by the union of the male sperm and the female ovum; pregnancy

**creation** *n.* (kre-'ā-shən) the product of imagination; the world and all the things in it

**create** *v.* (kre-'ā) cause to exist

**habitat** *n.* ('hā-bə-,tat) the area in which an organism or ecological community normally lives

**utterance** *n.* ('ə-tə-rən[t/s]) the power of speaking; speech; something expressed



## CREATION AND FALL OF MAN

### The Creation of Man

The history of the world started in Genesis 1. Before this, we do not know precisely what was there, for God preferred to keep it from us. If we want to study how the world began, our only source of true facts is the Bible.

As we have previously studied, God designed the world intricately to provide for man's needs. The world was prepared for the coming of God's finest creation – man.

If we study Genesis 1:1-25, we will notice that all of God's **creations** came into being after He said it. By His **utterance** the heavens and the earth appeared. The clouds, sun, land, oceans, seas, and rivers came into view through His word. And just before He made man, plants and animals came popping up into view.

However, Genesis 2:7-8 tells us how God made man. Man came to the world in a different manner than the other creatures. God **created** the universe and all that are within it, but God made man in "His image." Genesis 2:7 says, "And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul." God formed man. He designed his body and sculpted all his physical features from the top of his head to the tip of his toes. However, it did not end there, when He was satisfied with man's physical appearance, God "breathed into his nostrils the breath of life; and man became a living soul." Man took a deep breath and slowly opened his eyes. Finally, the Creator came face to face with the masterpiece of His creation.







Among all of God's creation, man possesses the highest qualities. God provided him with brain with which he can process ideas and reason. He gave him a kind of tongue which allows him to articulate sounds to express his thoughts and ideas. His freedom to decide is not totally controlled by instincts or his needs. However, with this freedom is the accountability to God and to society for his actions. Unlike animals, God gave man conscience so he can distinguish between right and wrong.

It is said that man was made with a God-sized vacuum in his heart that only God can fill. Because of this, man tries to seek a supernatural being to please and put his trust in His capacity to know and worship God makes him a lot different from animals.

### True or False.

- \_\_\_\_\_ 1. We don't know what happened before Genesis 1 because God chose to keep it from us.
- \_\_\_\_\_ 2. The only source of true facts on how the world began is the Bible.
- \_\_\_\_\_ 3. God made man in the same manner as He created the animals.
- \_\_\_\_\_ 4. Man and animals possess the same qualities.
- \_\_\_\_\_ 5. With man's freedom is the accountability to God and to society.

### Fill in the blanks.

6. The world was prepared for the coming of God's finest creation – \_\_\_\_\_.
7. God gave man \_\_\_\_\_ so he can distinguish between \_\_\_\_\_ and wrong.
8. God created the universe and all that are within it, but God made \_\_\_\_\_ in His \_\_\_\_\_.
9. God breathed into man's nostrils the \_\_\_\_\_ of life. And man became a living \_\_\_\_\_.
10. \_\_\_\_\_ means the world and all the things in it.

### The Fall of Man

God made the Garden of Eden for man. It is where he must live in harmony with the other creatures. God also made Eve from one of the Adam's ribs which He took from the man while he was asleep.

Now, man's **habitat** was complete. The rivers, the animals, flowers, trees, and plants for his needs were provided. God told him that he could eat all fruits in the garden except the fruit of the "tree of the knowledge of good and evil" in the midst. He warned him that eating this fruit would bring him death.

But man sinned. He disobeyed God by eating the forbidden fruit. Consequently, because of this sin, man fell away from the glory of God. The earth, which was perfect, would never be the same again. God drove Adam and Eve from the Garden of Eden to live by their sweat.

Genesis 3:16-19 records the curses that God pronounced to man for his pride and disobedience. "Unto the woman he said, I will greatly multiply thy sorrow and





thy **conception**; in sorrow thou shalt bring forth children; and thy desire shall be to thy husband, and he shall rule over thee. And unto Adam he said, Because thou hast hearkened unto the voice of thy wife, and hast eaten of the tree, of which I commanded thee, saying, Thou shalt not eat of it: cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life; Thorns also and thistles shall it bring forth to thee; and thou shalt eat the herb of the field; In the sweat of thy face shalt thou eat bread, till thou return unto the ground; for out of it wast thou taken: for dust thou art, and unto dust shalt thou return."

The result of man's sin has affected the Earth to this day. The ground was cursed so that man has to toil hard in order to feed himself and his family. Spikes and weeds choke crops to make labor unpleasant. Death becomes a natural thing to all living creatures. And man's body suffers pain and sickness that finally ends to death.



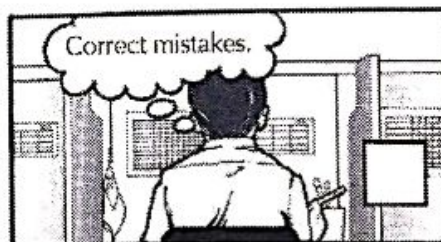
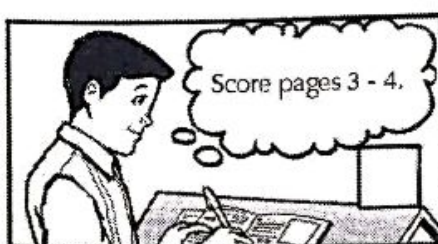
### Fill in the blanks.

1. God made the \_\_\_\_\_ of \_\_\_\_\_ where man must live in harmony with other creatures.
2. God made \_\_\_\_\_ from one of man's ribs.
3. God told Adam that he could eat all the fruits in the garden except the fruit of the tree of \_\_\_\_\_ of \_\_\_\_\_ and \_\_\_\_\_.
4. \_\_\_\_\_ is the area in which an organism or ecological community normally lives.
5. Unto the woman God said, "I will multiply thy \_\_\_\_\_ and thy conception."
6. God said to Adam, "in the \_\_\_\_\_ of thy face thou shalt eat \_\_\_\_\_."
7. Spike and weeds choke crops to make \_\_\_\_\_ unpleasant.
8. \_\_\_\_\_ comes naturally to all living creatures.

### Complete your verse.

"And they shall \_\_\_\_\_ my people the \_\_\_\_\_ between the holy and profane, and cause them to discern \_\_\_\_\_ the unclean and the clean."

Ezekiel 44:23





## VOCABULARY

- antediluvian** *adj.* (*an-ti-dā-'lū-vē-ən*) occurring before the Flood  
**canopy** *n.* (*'ka-nā-pē*) a suspended covering  
**epoch** *n.* (*'e-pāk*) a particular period of history  
**epicenter** *n.* (*'e-pi-sen-tər*) the point of the earth's surface directly above the focus of an earthquake  
**fault** *n.* (*'fōlt*) a fracture in the continuity of rock formation caused by the shifting of the earth's crust  
**hideousness** *n.* (*'hi-dē-əs-nəs*) repulsiveness  
**monotheistic** *n.* (*mā-nā-thē-'is-tik*) referring to the belief in one god  
**postdiluvian** *adj.* (*pos[t]-dā-'lū-vē-ən*) occurring after the Flood  
**quagmire** *n.* (*'kwag-mīr*) a difficult or precarious situation; land with a soft muddy surface  
**rudder** *n.* (*'rā-dər*) a vertically hinged plate mounted at the stern of a vessel for steering  
**seismic wave** (*'sīz-mik 'wāv*) an undulating surface movement caused by an earthquake  
**tectonic plate** (*tek-'tā-nik 'plā*) one of the large sections into which the earth's crust is divided



## FROM NOAH TO THE WORLD

The first principal **epoch** of human history was ushered to its turning point and extremity during the time of Noah. The "sin-disease", which started when Eve was tempted to discredit the Word of God, and manifested its **hideousness** in the personality and being of Cain, advanced to its full development through the wickedness of his descendants. Finally, the world had become a horrible **quagmire** of evil and corruption. Even our Creator Himself was disgusted and repented that He had ever made man upon the Earth.

God decided to put an end to man's wickedness. The flood was God's answer to it. During that time only Noah found favor in God's sight. He was a humble and obedient man who was willing to follow God's directions.

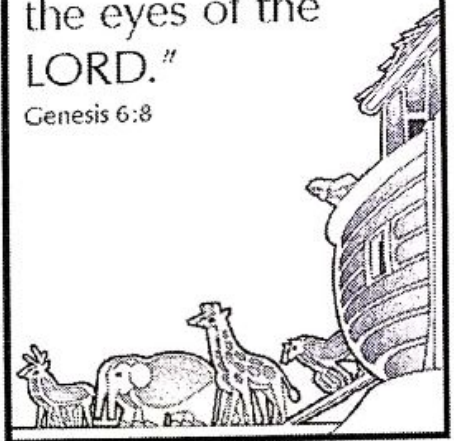
God instructed Noah to build an enormous boat, which could carry his family, the animals He wanted to save, and the food supply that would feed his family and the animals with them. The three-floor boat would be 450 feet long (137 meters), 75 feet wide (23 meters) and 45 feet high (14 meters). God's instructions was so precise that Noah was able to begin building the Ark right away without question.

The appointed day came and Noah and his family went inside the Ark. The animals that God wanted to set aside went into the Ark by two's and God Himself shut the door. Then, when everything was done according to His plan, God caused the **canopy** that has blanketed the earth to be ripped open. Rain, which the people had not seen before, fell heavily. The Lord opened all the fountainheads under the earth and large surges burst out causing great flash floods. The harsh downpour and flash floods continued for forty days and nights until the water level exceeded the highest point of the earth by approximately 22 feet (6.7 meters). The waters remained upon the surface of the earth for one hundred fifty days and destroyed all living creatures which breathed through their nostrils.

However, God remembered Noah. After almost a year since the flood began, God let Noah, his family, and the animals abandon the Ark. The Ark, which had no **rudder** or wheelhouse, finally rested on Mt. Ararat because God made it so.

"But Noah found grace in the eyes of the LORD."

Genesis 6:8

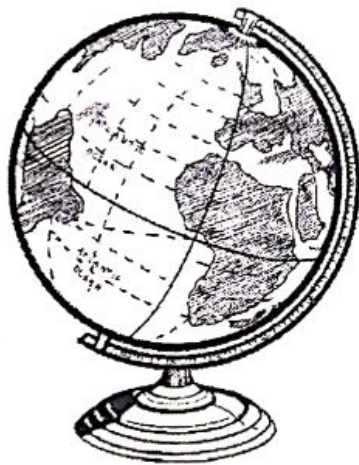




Mankind had become so worldly and carnal, that their wickedness reached even to Heaven, demanding judgment. Mankind was warned and provision was made for his salvation. Except for Noah's family, the warnings went unheeded. The flood was God's response to man's unrepentant heart. With the end of the flood, man was given another chance.

### Match these items.

- |                      |  |
|----------------------|--|
| _____ 1. epoch       | a) repented that He created man  |
| _____ 2. quagmire    | b) answer to man's unrepentant wickedness                                  |
| _____ 3. flood       | c) a particular period of history  |
| _____ 4. Ark         | d) where the Ark finally rested after the Flood                            |
| _____ 5. rudder      | e) a suspended covering  |
| _____ 6. hideousness | f) a difficult or precarious situation; land with a soft muddy surface     |
| _____ 7. canopy      | g) obeyed God without question; builder of the Ark                         |
| _____ 8. Mt. Ararat  | h) a vertically hinged plate mounted at the stern of a vessel for steering |
| _____ 9. Creator     | i) the boat that Noah built  |
| _____ 10. Noah       | j) repulsiveness   |



### The World after the Flood

Noah, his family, and the animals went out of the ark to inhabit a changed world very different from the one they had before the Flood. They saw a very strange world outside the ark. No doubt the areas of land and water were much different. They saw more water and less land around them. Mountains were washed out and some were severely deformed as the violent gush of water eroded them. Water filled the valleys and routes of rivers had been dislocated. Oceans, seas and lakes had emerged where there had been none before. New and more rugged mountains formed due to the intense displacement of earth's surface. Diverse and unusual sights had also emerged in this world as an outcome of the fierce Flood.

The climate in the **postdiluvian** world was greatly changed due to the destruction of the canopy that covered the earth before the flood. Divergent climates occurred as the regular cycle of seasons happened with the common emergence of rain, snow, and wind in different places. Many of the mountain peaks were covered by thick snow. Earth was exposed to the sun's radiation which shortened the life span of all inhabitants.

**Spread of Mankind to Asia and other Continents.** After the people and animals departed from the Ark, they and their young moved on to different directions. Others turned towards the direction of Europe; some went south to Africa; and others, to east to Asia. After the Flood, a land bridge linked Asia to North America through what is now the **Bering Strait**. Some moved to America on this, while the others crossed the land bridge that connected the islands of Southeast Asia to the continent. After some time, these land bridges were submerged because the ocean level rose due to the water from the melted ice.



D4 p.8

Fill in the blanks.

1. \_\_\_\_\_ and his \_\_\_\_\_ and the animals went out of the Ark to inhabit a very different world.
2. The people from the Ark saw more \_\_\_\_\_ and less \_\_\_\_\_.
3. The climate in the \_\_\_\_\_ world was greatly changed due to the destruction of the \_\_\_\_\_ that covered the world before the Flood.
4. After the Flood, a \_\_\_\_\_ linked Asia to North America. Others crossed the land bridges that connected Southeast \_\_\_\_\_ to the continent.
5. After some time, the land bridges submerged because the ocean \_\_\_\_\_ rose due to the water from the \_\_\_\_\_ ice.

**The Sons of Noah.** *"The sons of Noah who came out of the Ark were Shem, Ham and Japheth. These were the three sons of Noah and from them came the people who were scattered over the earth." Genesis 9:18-19.*

Whoever we are, we are all descendants of the people from the Ark. Noah and his wife are distant grandparents of everybody born after the Flood. All of us are directly related to either Shem and his wife, Ham and his wife, or Japheth and his wife. Every human being on earth today is your relative.

What were the color of Shem, Ham and Japheth? The Bible is not clear as to their colors but Acts 17:26 tells that God has "...made from one blood every nation of men to dwell on the face of the earth." Likewise Genesis 9:19 indicates that the whole earth was populated from the three sons of Noah.

The Bible always mentions Noah's sons in this order: "Shem, Ham and Japheth." Although we are told that the eldest son was Japheth, the middle was Shem and the youngest was Ham, most scholars believe the Scriptural order was based on the significance of their gifts to humanity. Shem would answer man's spiritual needs; material needs through Ham and philosophical needs through Japheth. Careful studying of the scripture shows that the order of their names is consistent.

**Shem.** The second son of Noah was born 98 years before the Flood. He outlived his descendants for 9 generations except for Eber (from whom we get the name Hebrew) and Abraham. Shem seemed to have been given pre-eminence after the Noah incident with "too much wine." He is the direct ancestor of the Semitic peoples. Three distinguished monotheistic religions - Judaism, Christianity and Islam - have Semitic beginnings.

**Ham.** The youngest son of Noah was born 96 years before the Flood. He lost favor with his father for something he did when Noah had "too much wine." He became the direct ancestor of the Egyptians, Cushites, Ethiopians, Libyans, Canaanites, Assyrians and Babylonians (Genesis 10:6-20).

**Japheth.** The eldest son of Noah was the ancestor of Gomer, Magog, Madai and the maritime people of Javan (Genesis 10:2-5). His younger brother Shem seemed to get the better of their father's blessing although he didn't get into trouble during the "too much wine" incident (Genesis 9:23, 27).





Identify which group of languages these belong to. Answer with Japhetic, Hamitic, or Semitic.

- \_\_\_\_\_ 1. Italian
- \_\_\_\_\_ 2. Hebrew
- \_\_\_\_\_ 3. Arabic
- \_\_\_\_\_ 4. Coptic
- \_\_\_\_\_ 5. English

- \_\_\_\_\_ 6. Iranic-Persian
- \_\_\_\_\_ 7. Spanish
- \_\_\_\_\_ 8. Aramaic
- \_\_\_\_\_ 9. French
- \_\_\_\_\_ 10. Portuguese

**Pangaea and Continental Drift.** If you look at the globe today, you will notice that there are large landmasses and smaller islands scattered and seemingly floating on vast bodies of water. Earth's land is 29 percent and its water is 71 percent.

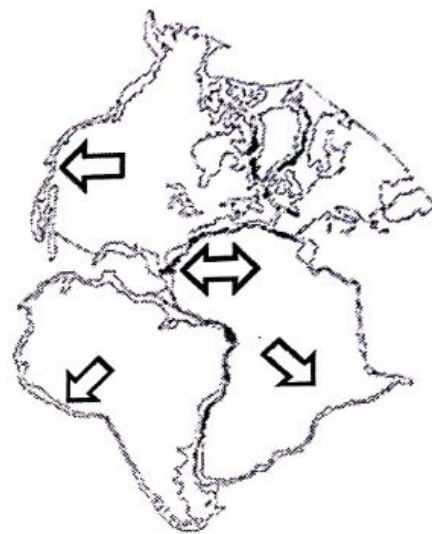
During the Earth's **antediluvian** history, there had been a super-continent called **Pangaea**, in which all landmasses were locked together in one area of the world. However, during the Flood and directly after it, excessive changes in earth's structure and atmosphere happened. Changes have been continually occurring, though very gradually.

The earth's crust is a thin rocky covering, which goes down to about 3 miles under the ocean and 22 miles under the continents. This is not very thick because the earth's diameter is about 8,000 miles. The earth's crust beneath the oceans and the continents is broken into enormous slabs called **tectonic plates**, each moving independently of the other. The borders of these plates are regions of tectonic action. Earthquakes and volcanic eruptions have a tendency to take place in these zones.

In recent years, geologists had uncovered evidence that the continents not only float, but that they also travel, or drift, sideways. Some of these tectonic plates consist almost completely of oceanic crust; others are made up of continental crust. Plate boundaries are commonly found in mid-ocean or close offshore, but in a few places rise from the sea floor and cross over dry land. An example of such a place is Western California, where the earthquake-prone San Andreas fault marks the boundary between the Pacific and North American plates.

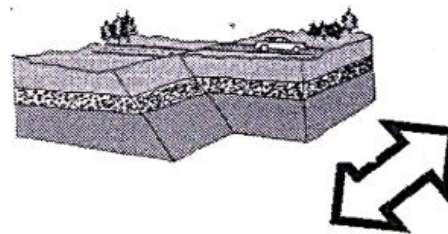
Plate tectonics are responsible for the continental drift. It is one of the forces that change earth's terrain. Volcanic mountains are formed where the plates meet and liquified hot rock may erupt from the **fault**. Earthquake results when sudden movement of the plates releases a large volume of heat. While earthquakes commonly happen by the borders of the plates, they may also happen far from the borders where stress builds up. The stress strains or shrinks the crust until it shivers and sends **seismic waves** in activity. The point at which an earthquake starts is called **focus** and the point on the surface on top of the focus is called the **epicenter**.

Seismic waves produced by an earthquake is detected and registered by the **seismograph**. A seismograph is a very sensitive device, which can record even the smallest earthquake not felt by the population in the area. The Richter scale measures the intensity of an earthquake. The smallest earthquake ever measured had an intensity of two; and the greatest, between eight and nine.

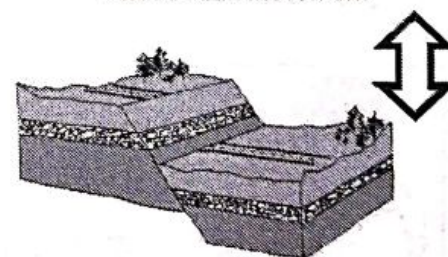


**Pangaea: super-continent**

Horizontal fault movement



Vertical fault movement





06 7. 13. 15

## VOCABULARY

**annex** *n.* (ə-'neks) an addition to a larger political unit

**apex** *n.* ('ā-peks) peak; highest point

**civilization** *n.* (si-v ə' zə-sh ən) an advanced state of cultural and material development in human society, marked by political and social complexities and progress in arts and science

**cradle of history** the origin of an interesting past

**cuneiform** *adj.* (kyu-nē-ə-,form) wedge-shaped, characters used in ancient Mesopotamian writing

**dynasty** *n.* ('dī-nə-ste) a succession of rulers from the same family or line

**empire** *n.* ('em-pīr) a political unit having an extensive territory or comprising a number of territories and ruled by single supreme authority

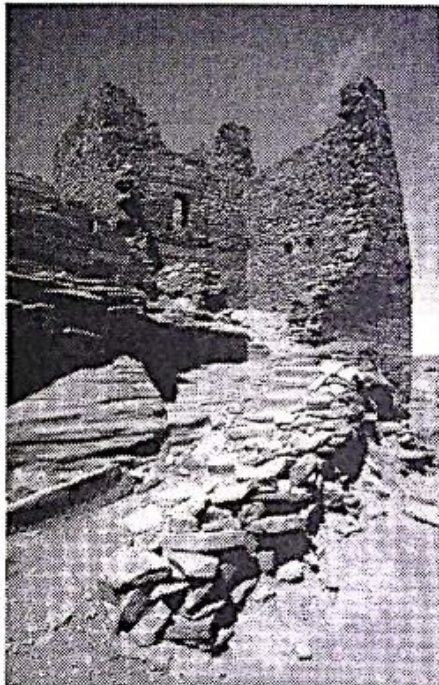
**statesman** *n.* ('stats-mən) a man who is a leader in national and international affairs

**upheavals** *n.* (up-'hē-val) a sudden violent disruption



## EARLY CIVILIZATION

### Mesopotamia



MESOPOTAMIA ("land between the rivers") is one of the earliest places of urban civilization. It is located in the area of present Iraq and Eastern Syria between the Tigris and Euphrates rivers. These twin rivers are 250 miles (400 km) apart as they flow south out of Turkey. Euphrates flows south and east for 800 miles (1300 km) and the Tigris flows south for 550 miles (885 km). This area is a part of the Fertile Crescent, which is a vast region shaped like a crescent extending across the northern part of the Syrian Desert and stretching from the Nile Valley to the Tigris and Euphrates rivers. The strategic site, fertile soil and complimentary climate made Mesopotamia the cradle of history and civilization.

Prior to 3500 BC, there were no civilizations, only cultures. Prehistoric people created societies, constructed houses, lived in villages, hunted and fished, farmed, made pottery, wove cloth, and created languages but they did not build cities, read, or write.

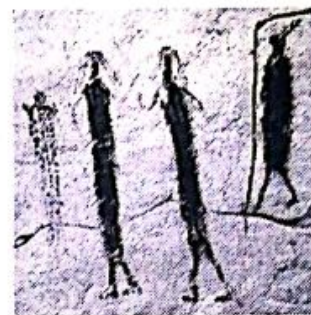
Later, a group of people called Ubaidians built villages in the area known later as Sumer. These settlements slowly evolved into the Sumerian cities of Adab, Eridu, Isin, Kish, Kullab, Lagash, Larsa, Nippur, and Ur. Many centuries afterward, as the Ubaidians prospered, Semites from the Syrian and Arabian deserts began to slowly penetrate the region some as peaceful immigrants and others as bandits in search of loot.

Afterwards, around 3250 BC, one more group of people moved from their homeland, northeast of Mesopotamia, and started to intermarry with the native inhabitants. The immigrants, who were later called Sumerians, spoke an agglutinative language uncommon to any other known language.

The Sumerians were the real forerunners of civilization. Earlier, human beings domesticated plants and animals and inhabited small villages. But it was the Sumerians who built cities, had system of writing, used wheeled carts, and made use of many other inventions. Sumerians established city-states. These city-states were sometimes bitter rivals and sometimes allies. Sumerians used chariots in wars. They also used copper helmets and were armed with copper weapons. One leading city was Erech (known as Uruk to Sumerians), which had protective walls of sun-dried bricks. Evidences of Erech can still be seen in Iraq today. Diggings at Erech discovered a library of valuable information about Sumerian history.



Sumerians' contributions to civilization include the first system of writing (using of pictographs). They also built schools, libraries, and temples. A Sumerian king of the city-state of Ur named **Ur-Nammu** passed the world's first law codes. The first map was that of the city of Nippur which was drawn by a Sumerian cartographer. Other contributions to civilization are a lunar calendar, the wheel, the plow, and early bronze work. The use of the number 12 (and multiples of 12) as for time and degrees is from the Sumerians, along with the dozen as a measure. The first great epic - the Epic of Gilgamesh, based on the life of one of Sumer's early kings - was written on clay tablets.

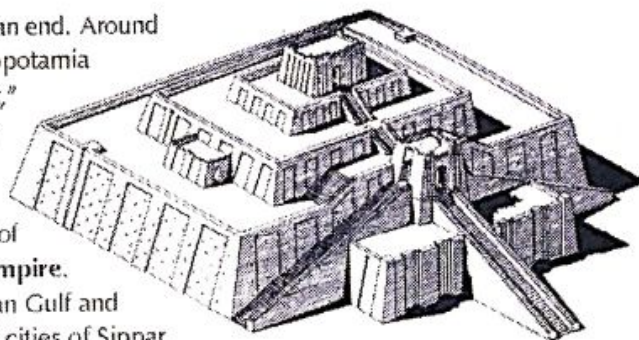


*Pictographs*

**Fill in the blanks.**

1. \_\_\_\_\_ is an advanced state of cultural and material development in human society, marked by political and social complexities and progress in arts and science.
2. \_\_\_\_\_ is the "land between the rivers."
3. The vast fertile region \_\_\_\_\_ like a \_\_\_\_\_ is called the Fertile Crescent.
4. The \_\_\_\_\_ were the real forerunners of civilization.
5. The first map was that of the city of \_\_\_\_\_, drawn by a Sumerian cartographer.
6. The Epic of \_\_\_\_\_ was based on the life of a Sumerian king and was written on \_\_\_\_\_.
7. Cradle of \_\_\_\_\_ means the place of origin of an interesting past.
8. The rivers of \_\_\_\_\_ and \_\_\_\_\_ supplied abundant water for farming in Mesopotamia.
9. One leading city, Erech, had protective walls made of \_\_\_\_\_ bricks.
10. The Sumerians built \_\_\_\_\_, had a system of \_\_\_\_\_, wheeled carts, and made use of many other inventions.

**Akkadians.** The period of Sumerian ascendancy also came to an end. Around 2330 BC, a Semitic people called the Akkadians from central Mesopotamia conquered the region. Their king, Sargon I, called "The Great," founded the **dynasty** of Akkad. Under him, they extended their rule over Sumer, to the whole of Mesopotamia. Sargon founded a new capital city called Agade in the north of Sumer and made it the most powerful and the richest city in the world. By his use of power, Sargon created the first world **empire** — the **Akkadian Empire**. Its conquests extended its borders towards the east to the Persian Gulf and towards the west to the Mediterranean Coast. In the Akkadian cities of Sippar, Assur, Eshnuna, Tell Brak, and Akkad, the palace was more prominent than the temple. An extraordinary copper head from Nineveh (Iraq Museum), most likely representing Naram-Sin, Sargon's grandson, stresses the nobility of these Akkadian kings, who took on a godlike manner.



*Ziggurat of Ur-Nammu*

The Akkadian dynasty ended after about a century of rule. Due to weak kings who succeeded Sargon, Mesopotamia was plunged into **upheavals** and confusions. Different city-states fought against each other to gain supremacy over the land.

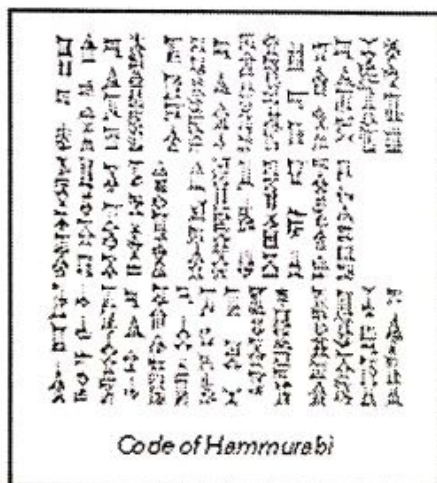


## True or False.

- \_\_\_\_\_ 1. Akkadian kings took on a godlike manner.
- \_\_\_\_\_ 2. King Sargon the Great founded the dynasty of Akkad.
- \_\_\_\_\_ 3. By his use of power, King Sargon created the first world empire.
- \_\_\_\_\_ 4. In Akkadian cities, the temples were more important than the palaces.
- \_\_\_\_\_ 5. The Akkadian dynasty ended after about a century of rule.

## Fill in the blanks.

- 6. Around 2330 BC, a Semitic people called the \_\_\_\_\_ from central Mesopotamia conquered the region.
- 7. \_\_\_\_\_ means a succession of rulers from the same family or line.
- 8. The Akkadian Empire's borders were the Persian Gulf in the \_\_\_\_\_ and the coast of the \_\_\_\_\_ in the west.
- 9. An \_\_\_\_\_ is a political unit having an extensive territory or comprising a number of territories and ruled by single supreme authority.
- 10. Upheavals means a sudden violent \_\_\_\_\_.



Code of Hammurabi

**Babylonians.** Before the beginning of 2000 BC, Semitic nomads from the desert to the west of Sumer and Akkad, which were called the Amorites, invaded the kingdom. Later, they slowly became the masters of the prime cities of Isin and Larsa. The political disorder that followed lured the Elamites to attack the powerful city of Ur and then take the king into captivity.

**Babylonian Empire.** The fall of Ur incited bitter struggles between powerful city-states to gain control over the Mesopotamia. Around 1894 – 1880 BC King Hammurabi founded the Babylonian Empire. Its boundaries were Syria in the north, Elam in the south and the Mediterranean coast in the west. The empire was named after its capital city, Babylon.

Hammurabi was the greatest ruler in the first Babylonian dynasty. He was not only great in his military pursuits but also a statesman who brought his empire to the peak of its glory. During his reign, civilization and governance flourished.

After merging his conquests under a central government at Babylon, he concentrated his efforts in securing his borders and fostering the internal prosperity of the empire. During his long reign, he personally oversaw navigation, irrigation, agriculture, tax collection, and the erection of many temples and other buildings. He was a successful military leader and administrator. His rule became an example of integrity and productivity. He promulgated the first written law called "The Code of Hammurabi," which consisted of 285 decrees governing property rights, family relations, marriage and divorce, adoption of children, labor, commerce, and crimes.

**Babylonian society.** Babylonian society was classified into 3 social classes: 1) the nobles which consisted of the king, aristocrats, priests, and rich landlords; 2) the freemen, where the farmers, merchants, soldiers, and artisans belonged; and 3) slaves. The women were recognized and can hold high positions in Babylonian society. A woman could leave her husband, if he was proven to be cruel or unfaithful.



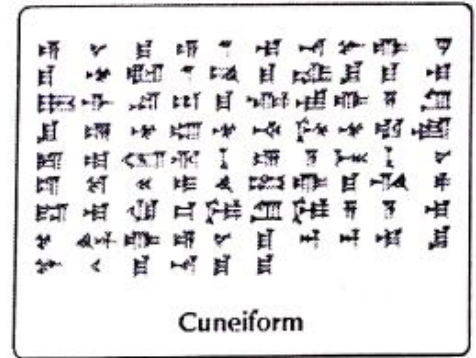
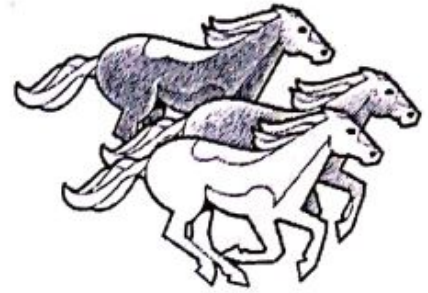
**Economic Life.** Because of the abundant supply of water from the twin rivers, farming was the chief industry of ancient Babylonia. Babylonians grew crops such as wheat, oats, and vegetables. They also raised donkeys for transportation and horses for wars. Cows and other meat-producing animals were also raised in their farms.

Babylonians were good in commerce and trade. They traded with other cities and villages using donkeys and camels to transport their wares. Since there was no system of coinage in ancient Babylonia, people used gold, silver, and copper as money.

**Writing and Literature.** Cuneiform was the Babylonian's system of writing. It was adopted from the Sumerians. Their writings were engraved in clay tablets with sharp objects and baked in ovens to make them hard for safekeeping.

Babylonian literature was abundant and took the form of tales, legends, fables and poetry. There was also wide assortment of epics and myths; historical chronicles and royal annals as well as historical romances in poetic form; hymns and prayers, incantations and rituals, and texts dealing with magic and divination.

**Arts.** The ziggurat was Babylonia's highest architectural achievement. It was a temple-tower and the principal form of religious structure in ancient Mesopotamia. Ziggurats were built out of mud brick and often faced with glazed brick. They rose in stepped stages, each stage being smaller than the one below it. The top was a small temple or sanctuary where religious rites were performed.



#### True or False.

- \_\_\_\_\_ 1. The capture of the city of Ur by the Elamites led to the rise of the Babylonian Empire.
- \_\_\_\_\_ 2. The women are not recognized in the Babylonian society.
- \_\_\_\_\_ 3. Because of the abundant supply of water, agriculture became Babylonia's chief industry.
- \_\_\_\_\_ 4. Ziggurats were buildings with religious purposes.
- \_\_\_\_\_ 5. The cuneiform was adopted from the Assyrians.

#### Fill in the blanks.

6. King \_\_\_\_\_ founded the Babylonian Empire.
7. He was not only good in military pursuits but he was also a \_\_\_\_\_ who brought his empire to the peak of its glory.
8. The central government of Babylonia was in \_\_\_\_\_ its capital city.
9. The Code of Hammurabi consisted of \_\_\_\_\_ written \_\_\_\_\_ that governed the Babylonians' life.
10. Babylonians were good in \_\_\_\_\_ and trade.
11. The Babylonians used \_\_\_\_\_ and \_\_\_\_\_ as money.
12. \_\_\_\_\_ was the Babylonians' system of writing.
13. A Statesman is a man who is a \_\_\_\_\_ in national and international affairs.
14. The \_\_\_\_\_ is Babylonian's highest \_\_\_\_\_ achievement.
15. The top of a ziggurat was a temple or \_\_\_\_\_ where \_\_\_\_\_ rites were performed.





**"Tiglath-Pileser III vanquished the Syrian kingdoms, including Damascus. He then annexed the Phoenician coastal cities, Israel, and Gaza into the empire, and extended his influence as far to west as the Anatolian Plateau in modern-day Turkey."**

**Assyrians.** Around 2300 BC, Assyria was part of the empire of Sumer and Akkad. Following the collapse of that empire in about 2000 BC, the Amorites, a Semitic people from the Arabian Desert, infiltrated and defeated much of Mesopotamia, including Assyria. By 1850 BC, Assyrian merchants had established villages in the central parts of Anatolia where they carried on trade in copper, silver, gold, tin, and textiles. Later, they established their capital city on the bank of the Tigris River and named it Assur after their war god (Ashur).

The Assyrians learned the use of iron from the Hittites. They used this knowledge to revolutionize the art of warfare. Iron weapons were invented and horse-drawn war chariots were organized into mobile cavalry units. Camels and horses were used to transport logistics to the battlefield. Their exceptional weapons, excellent military strategies, and fierce bravery made them the most feared warriors in Asia during their time. Assyrians were noted to be of bloodthirsty and warlike people.

**Assyrian Empire.** Originally, the Assyrian campaigns were just plunders in pursuit of booty and tribute. For example, Tiglath-Pileser I (reigned 1115-1076 BC), protected the Assyrian outskirts against the Aramaeans and the Mushki by conducting raids that took him farther than his boundaries. Usually, the threatened peoples fled as his armies came closer; those who stayed behind were either massacred or carried off to Assyria. The plundered villages and cities were rampaged and burned, but were not annexed as their territories.

After some time, this sort of conquest altered. The Assyrian rulers began to attach the conquered lands into their domain making Assyria the center of a new empire. Toward the end of the 10th century BC, Assyria had already occupied a vast territory.

The apex of Assyrian domination was during the regime of Tiglath-Pileser III (reigned 745-727 BC), who was considered the founder of the last Assyrian Empire, which extended from present-day Iran to Israel. He reestablished the Assyrian Empire as a dynamic force after half a century of disorder and stagnation. He also implemented a centralized system of government so that his successors would be able to rule vast stretches of territory. Tiglath-Pileser III vanquished the Syrian kingdoms, including Damascus. He then annexed the Phoenician coastal cities, Israel, and Gaza into the empire, and extended his influence as far to the west as the Anatolian Plateau in modern-day Turkey.

The first sign of decline appeared during the reign of Ashurbanipal (reigned 669-627 BC), the last great king of the Assyrian Empire. During his reign, he expanded his domain until southern Egypt and western Anatolia. Unlike his predecessors, Ashurbanipal was not warlike. He preferred intellectual activities like reading books. Assyrian literature and art attained its peak during his reign. He was literate, and his scribes amassed the first systematically collected library in that area; it included scholarly and literary texts and works on magic. His royal palaces, especially at the Assyrian capital of Nineveh, were adorned with magnificent projections portraying scenes of war, wild-animal hunts, and everyday palace life.

Fill in the blanks.

1. Originally the Assyrian campaigns were just \_\_\_\_\_ in pursuit of \_\_\_\_\_ and tribute.
2. Assyrians learned the use of iron from the \_\_\_\_\_.
3. The Assyrians had iron weapons and \_\_\_\_\_ were organized into mobile cavalry units.
4. Assyrians were noted to be a bloodthirsty and \_\_\_\_\_ people.
5. The apex of Assyrian domination was during the reign of \_\_\_\_\_.
6. Assyrian King \_\_\_\_\_ preferred \_\_\_\_\_ activities like reading books.
7. His capital city was \_\_\_\_\_ where he had well-adorned palaces.

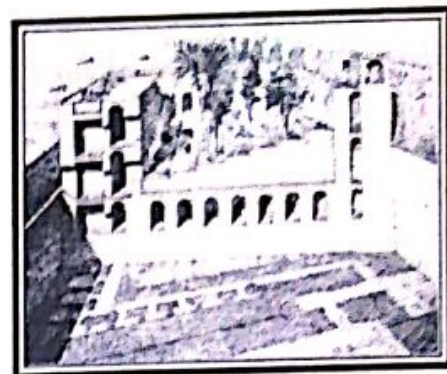


**Chaldeans.** In 626, when Assyria was in chaos and threatened by the Medes, the Scythians, and the Cimmerians, a Chaldean named **Nabopolassar** allying himself with the Medes, and rose against Assyria. In 612 Assyrian capital city Nineveh was captured and Nabopolassar proclaimed himself king of Babylonia. From the ruins of the Assyrian Empire rose the Chaldean Empire or the Neo Babylonian Empire.

Nebuchadnezzar, son of Nabopolassar, who reigned for 43 years, extended Babylonian political control over all of Mesopotamia. To students of the Scriptures, Nebuchadnezzar was the destroyer of Jerusalem and as the king who took the captive Jews to Babylonia. To archaeologists and historians, he is the great builder and restorer. He rebuilt Babylon. In his elaborate style, he restored many temples all over Babylonia.

The restoration of Babylon did not last long. After Nebuchadnezzar's death (562 BC), there was a struggle for power among for several years. In 556 BC, Nebuchadnezzar's governor, Nabonidus, became king of Babylonia (r. 556-539 BC). In a slightly mysterious figure, he antagonized the influential priestly class of Babylon. Later, Nabonidus left the city of Babylon under control of his son, Belshazzar. In 539 BC, Persian king Cyrus the Great, defeated the Babylonians. Nabonidus was captured and the Persians occupied Babylon without opposition. Then Babylonia was annexed to Persia and never gained her independence again.

The world continues to remember Mesopotamia for her many contributions to our modern civilization. To mention a few: the invention of writing called cuneiform enabled man to record history; the plow and wheel improved farming, pottery and land transportation; the sexagesimal system is used in mathematics; the cities, schools, libraries, and temples which gave us knowledge of their achievements; and the fabulous Hanging Gardens of Babylon which became one of the Seven Wonders of the Ancient World.



*Artist rendition of Hanging Gardens of Babylon*

#### Fill in the blanks.

1. The Assyrians capital Nineveh was captured under the leadership of a \_\_\_\_\_ named \_\_\_\_\_.
2. From the ruins of the Assyrian Empire rose the \_\_\_\_\_ Empire or the \_\_\_\_\_ Empire.
3. \_\_\_\_\_, son of Nabopolassar was the restorer of Babylon.
4. To Bible students, Nebuchadnezzar was the destroyer of \_\_\_\_\_ and the king who took captive \_\_\_\_\_ to Babylonia.
5. In 539 BC, Babylon was occupied by the \_\_\_\_\_ under King \_\_\_\_\_ the Great.

#### Enumerate.

6. Five contributions of Mesopotamia to our modern civilization:

- a) \_\_\_\_\_
- b) \_\_\_\_\_
- c) \_\_\_\_\_
- d) \_\_\_\_\_
- e) \_\_\_\_\_

Score pages 14 - 18.

Correct mistakes.

Rescore.



Answer these questions to test your understanding of this section. If you score below 90%, restudy the section. If you score above 90%, you should restudy any areas you did not understand.

### CHECKUP

My Score: \_\_\_\_\_  
(2 points each)

#### True or False.

- \_\_\_\_\_ 1. Akkadian kings took on a godlike manner.
- \_\_\_\_\_ 2. King Sargon the Great founded the dynasty of Assyria.
- \_\_\_\_\_ 3. The women were recognized by the Babylonian society.
- \_\_\_\_\_ 4. Because of the abundant supply of water, agriculture became Babylonia's chief industry.
- \_\_\_\_\_ 5. Ziggurats were buildings of religious purposes.

#### Match these items.

(3 points each)

- |                             |   |
|-----------------------------|---|
| _____ 6. Mesopotamia        | a) vast fertile region shaped like a crescent                   |
| _____ 7. Sumerians          | b) first map drawn by a Sumerian cartographer                   |
| _____ 8. Civilization       | c) Neo-Babylonian Empire  |
| _____ 9. Dynasty            | d) consisted of 285 written laws                                |
| _____ 10. Empire            | e) land between two rivers                                      |
| _____ 11. King Hammurabi    | f) advanced state of human cultural and material development    |
| _____ 12. Cuneiform         | g) founder of Babylonian Empire                                 |
| _____ 13. Ziggurat          | h) Babylonia's system of writing                                |
| _____ 14. Assyrians         | i) real forerunners of civilization                             |
| _____ 15. Fertile Crescent  | j) succession of rulers from the same family                    |
| _____ 16. Nineveh           | k) bloodthirsty and warlike people                              |
| _____ 17. Nebuchadnezzar    | l) Babylonia's highest architectural development                |
| _____ 18. Chaldean Empire   | m) political unit having an extensive territory                 |
| _____ 19. City of Nippur    | n) destroyer of Jerusalem and carried captive Jews to Babylonia |
| _____ 20. Code of Hammurabi | o) political capital of Assyria                                 |

#### Fill in the blanks.

(3 points each)

21. The rivers of Tigris and Euphrates supplied \_\_\_\_\_ for farming in Mesopotamia.
22. The \_\_\_\_\_ built cities, a system of writing, wheeled carts, and many other invention.
23. \_\_\_\_\_ mean a sudden violent disruption.
24. The \_\_\_\_\_ used gold, silver, and copper as money.
25. The top of a \_\_\_\_\_ was a temple or sanctuary where they perform religious rites.
26. The apex of Assyrian domination was during the reign of \_\_\_\_\_.
27. Assyrians learned the use of \_\_\_\_\_ from the Hittites.
28. \_\_\_\_\_, son of Nabopolassar was the restorer of Babylon.
29. The \_\_\_\_\_ and the \_\_\_\_\_ improved farming, pottery, and land transportation.
30. The fabulous \_\_\_\_\_ was one of the seven wonders of the ancient world.
31. In 539 BC, Babylon was occupied by the \_\_\_\_\_ under King Cyrus the Great.
32. The invention of writing called cuneiform enabled man to \_\_\_\_\_.
33. Assyrian King Ashurbanipal preferred \_\_\_\_\_ activities like reading books.
34. \_\_\_\_\_ system in mathematics is used to tell time.
35. Assyrians organized \_\_\_\_\_ into mobile cavalry units.

Score this Checkup.

Correct mistakes.

Rescore.



## VOCABULARY

- archaeological findings discoveries taken from a systematic recovery and study of material evidence from the past human cultures
- aristocracy *n.* (ar-ə-'stā-krə-sē) a hereditary ruling class
- decorum *n.* (di-'kōr-əm) appropriateness of behavior or conduct
- philosophy *n.* (fə-'lā-sə-'fē) a system of motivating values, concepts or principles of an individual, group or culture
- relics *n.* ('re-lik-s) things that have survive extinct cultures



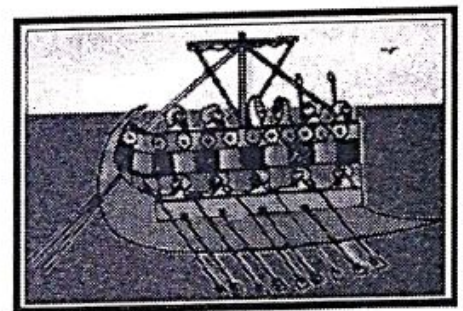
## OTHER ANCIENT CIVILIZATIONS

**Phoenicians.** The word "Phoenicia" is derived from a famous purple dye called **phoenix** *n.* ('fē-niks), which is taken from a special kind of shellfish. Although Phoenicians had an unvarying civilization and regarded themselves as a single nation, Phoenicia was not a unified state but a group of city-kingdoms. These city-kingdoms would usually strive to dominate the others. The most important of these cities were Simyra, Zarephath (Sarafand), Byblos, Jubail, Arwad (Rcuad), Acco ('Akko), Sidon (Sayda), Tripolis (Tripoli), Tyre (Sur), and Berytus (Beirut). The two most assertive were Tyre and Sidon, which took turns as cities of the ruling power.

The Phoenicians, which is called Sidonians in the Old Testament were Semites and were related to the Canaanites of ancient Palestine. Historians discovered that they built their first settlements on the Mediterranean coast in about 2500 BC. Earlier they were under the influence of the Sumerian and Akkadian cultures of nearby Babylon. About 1800 BC, Egypt which was spreading in the Middle East, attacked and took control of Phoenicia, retaining it until around 1400 BC. The raids of the Hittites on Egyptian territory opened the Phoenician cities an opportunity to revolt and become independent (1100 BC).

Benefiting from their autonomy, the Phoenicians developed to be the most important traders and sailors of the ancient world. The ships of the coast cities traveled throughout the Mediterranean and also into the Atlantic Ocean. Other nations competed to engage Phoenician ships and crews in their navies. Because of their maritime trade the city-kingdoms established many colonies, famous were Utica and Carthage in North Africa, on the islands of Rhodes and Cyprus in the Mediterranean Sea, and Tarshish in southern Spain. Tyre was the head of the Phoenician cities but was conquered again by Assyria in the 8th century BC. After Assyria fell in late 7th century BC, Phoenicia was annexed into the Chaldean Empire of Nebuchadnezzar II, and in 539 BC, became dominion of the Persian Empire. Sidon became the leading city of Phoenicia under the Persian Empire.

Phoenicia's most significant contribution to civilization was the alphabet. The purple dye, called Tyrian purple, and the invention of glass are from the Phoenicians. Phoenician industries, especially the production of textiles and dyes, metalworking, and glassmaking, were famous in the ancient world.

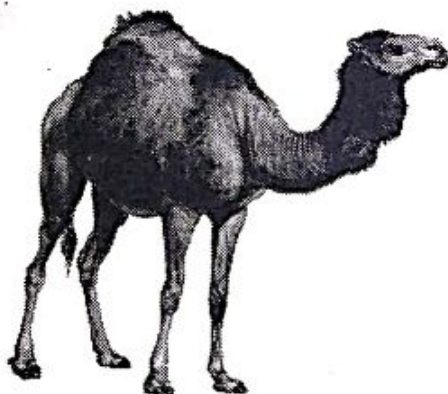


*Phoenician Sailors and Traders*



**Fill in the blanks.**

1. The word " \_\_\_\_\_ " is derived from a famous purple dye called \_\_\_\_\_.
2. Phoenicia was not a unified state but a group of \_\_\_\_\_.
3. The two most assertive city-kingdoms were \_\_\_\_\_ and \_\_\_\_\_, which took turn as cities of the ruling power.
4. Benefiting from their autonomy, the Phoenicians developed to be the most important \_\_\_\_\_ and \_\_\_\_\_ of the ancient world.
5. Phoenicia's most significant contribution to civilization was the \_\_\_\_\_.
6. The purple dye, called \_\_\_\_\_ purple, and the \_\_\_\_\_ of \_\_\_\_\_ are from the Phoenicians.
7. The Phoenicians were called \_\_\_\_\_ in the Old Testament.
8. They were Semites and were related to the \_\_\_\_\_ of ancient Palestine.



**Persia.** Persia is the country now known as Iran. The Iran name was in common use in the West until 1935; despite the Iranians had long called their country Iran. For the sake of history the name Persia was retained.

Aryan tribes settled in the Iranian Plateau around 1500 BC. The Medes, which was the most important of the tribes, occupied the northwestern portion, and the Persians who came from Parsua, settled in the southern region of the Plateau which they called Parsamash. The first Persian prominent leader was a warrior chief named Achaemenes who lived around 681 BC. The Persians were under the rule of the Medes until 550 BC when Cyrus the Great became king.

During his reign, Cyrus the Great overthrew the Median rulers, vanquished the kingdom of Lydia in 546 BC and Babylonia in 539 BC. He established the Persian Empire as the predominant power of the world. His son Cambyses II, who succeeded him as king, extended the Persian domain conquering the Egyptians in 525 BC. Darius I, who became king in 521 BC, moved the Persian boundaries eastward to the Indus River. He had a canal dug from the Nile to the Red Sea, and restructured empire. Consequently, Darius I acquired the title Darius the Great. From 499 to 493 BC, crushed revolts by the Ionian Greeks who were under Persian rule and then launched an attack against the European Greeks for helping the rebels. His forces were battered by the Greeks at the Battle of Marathon in 490 BC. While preparing an invention against the Greeks, Darius died. His son Xerxes I, succeeded him. His attempts to fulfill his father's plans met defeat at the Battle of Salamis in 480 BC and in the following land battles after that. The monarchs that came after Darius I were not as good as he was. During the reign of Artaxerxes I, the Egyptians revolted supported by the Greeks. Although it was later suppressed, it started the decline of the Persian Empire.

The Persian civilization will always be remembered because of the many things it has contributed to modern day. It gave the world among others, a model of the system of provincial administration, the local system of taxation, and the first postal service. It also showed us an elaborate system of court **decorum**, which is still practiced by some royal courts of the world today.



Fill in the blanks.

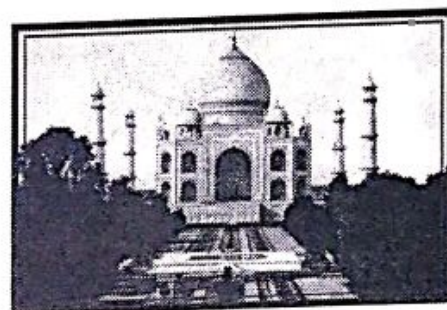
1. Persia is the country now known as \_\_\_\_\_.
2. The \_\_\_\_\_ were the most important tribe that settled in the Iranian Plateau.
3. The Persians were under the rule of the Medes until 550 BC when \_\_\_\_\_ became king.
4. \_\_\_\_\_ became king in 521 BC and moved the Persian boundaries eastward to the Indus River.
5. He had a \_\_\_\_\_ dug from the \_\_\_\_\_ to the Red Sea.

Enumerate.

6. Persian contributions to civilization:

- a) \_\_\_\_\_
- b) \_\_\_\_\_
- c) \_\_\_\_\_

**India.** Archaeological findings of India's ancient civilization can be seen today at Mohenjo-Daro in Sind and Harappa in Punjab. Relics of this ancient culture tell that the people who settled in the Indus Valley had a high culture. They knew mathematics, engineering, architecture, painting, sculpture, and government. However, because the ancient Indians left no written records of their social, cultural, and political activities, historians are obliged to depend mostly on archaeological discoveries for an understanding of the earliest civilization on the subcontinent. Evidence indicates that the aborigines of the subcontinent were scattered and partially assimilated by invading Dravidian tribes, who most likely came from the west. Archaeological discoveries in the Indus Valley imply that the civilization developed by the Dravidians equaled and perhaps exceeded in grandeur the civilizations of ancient Mesopotamia and Egypt. Around the middle of the 3rd millennium BC, Dravidian India was exposed to series of invasions by tribes of the Indo-European linguistic stock. These tribes were usually referred to as Indo-Aryans. They entered the subcontinent through the mountain passes along the northwestern border and gradually took most of the territory north of the Vindhya Range and west of the Yamuna River. Many Dravidians fled to the north and into the Indian Peninsula. The remnants of the Dravidian people and according to some historians, much of their culture, were absorbed by the Indo-Aryans.



*Taj-Mahal of India*

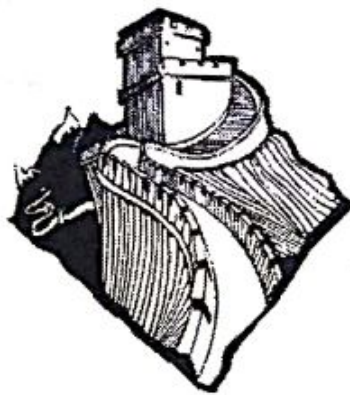
**Vedic Period.** Obscurity engulfs Indo-Aryan political history for many centuries after the conquest of the Dravidian. However, the Vedas, a collection of sacred writings dating from about 1200 BC, contains considerable information on Indo-Aryan social practices, religious beliefs, and cultural attainments. Some Vedic hymns depict that the civilization that appeared on the early centuries of Indo-Aryan supremacy on the subcontinent was remarkable in many aspects. Tribal political organs performed according to democratic ideals, the social status of women compared favorably with that of men and the institution of marriage was considered as sacred. The Indo-Aryans had developed advanced skills in different arts and sciences, including animal husbandry, metal handicrafts, carpentry, boat building, and military science.

The Vedic hymns composed during and later periods also picture the rise of the great socio-religious system known as Hinduism. Practically all that is known with certainty of their political attainments is that of the Indo-Aryans. In the course of the 1st millennium BC, the Indo-Aryans established 16 autonomous states in the region bounded by the Himalayas, the southern reaches of the Ganges, the Vindhya Range, and the Indus Valley. Of these states, the most important was Kosala, a kingdom situated in the region occupied by modern Oudh. Other important kingdoms were Avanti, Vamsas, and Magadha. The last-named kingdom, which occupied the territory of modern Bihar, became the dominant state of India. During the reign of its first great king Bimbisara (reigned about 543-491 BC), Buddha and Vardhamana Jnatiputra or Nataputta Mahavira, the respective founders of Buddhism and Jainism, preached and taught in Magadha.



Fill in the blanks.

1. Archaeological findings of India's ancient civilization can be seen today at \_\_\_\_\_ in Sind and \_\_\_\_\_ in Punjab.
2. Relics of this ancient culture tell that the people who settled in the Indus Valley had a \_\_\_\_\_.
3. \_\_\_\_\_ engulfs Indo-Aryan political history for many centuries after the conquest of the Dravidian.
4. The \_\_\_\_\_, a collection of sacred writings dating about 1200 BC, contains considerable information on Indo-Aryan culture.
5. The Vedic hymns composed during and later periods also picture emergence socio-religious system known as \_\_\_\_\_.



**China.** According to tradition the Xia (2205?-1766? BC) was the first hereditary Chinese dynasty. It ended only when a Xia ruler fell into revelry, abused his people, and was consequently vanquished. Nonetheless, there are no archaeological facts to establish this story. The Shang is the earliest dynasty, which has reliable historical evidence.

**The Shang Dynasty.** The Shang dynasty (1766-1027? BC) controlled the territory of the present-day north-central Chinese provinces of Henan, Hubei and Shandong and the northern part of Anhui. The capital, from about 1384 BC, was located at Anyang close to the northern border of Henan. The economy was agricultural. Millet, wheat, barley, and possibly some rice were grown. Silkworms were cultivated, and pigs, dogs, sheep, and oxen were raised. Relics of bronze vessels, weapons, and other tools have been found, which declares of a high level of metallurgy and craftsmanship. The Shang was an elite aristocracy. The king presided over a military nobility. He appointed territorial rulers and compelled to support him

in military endeavors. Next to this aristocratic class was a literate priestly class that kept the records of government and was responsible for divination. Shang people worshiped many gods including their ancestors. Their principal god was known as Shang Ti, the Lord on High.

The story of the fall of the Shang follows closely the story of the fall of the Xia. The last Shang monarch, was overthrown by a vigorous king of Zhou (Chou), a state in the Wei River valley. Located on the northwestern fringes of the Shang domain, the culture of Zhou was a combination of the Shang civilization and of the martial traditions typical of the non-Chinese peoples to the north and west.

The Zhou dynasty was the longest and the greatest dynasty that ruled China. Chinese civilization bloomed under this dynasty. The imperial system of government was under the king who assumed the title "Son of Heaven". Only the educated and talented were appointed as royal ministers. Passing the Civil Service examinations was a requirement for working in any government office. Chinese philosophy bloomed during this dynasty.

**Golden Age of Chinese Philosophy.** The Zhou dynasty brought about the flowering of Chinese philosophy. Three famous philosophers appeared during this era. They were Confucius, Lao, and Mencius. Their philosophical teachings equaled with those of Socrates, Plato, Aristotle and other great philosophers of the Western World.

**Confucius.** He is one of the world's greatest philosophers and China's most beloved teacher. His name in Chinese was K'UNG FU-TZU (circa 551-479 BC). According to tradition, he was born in the state of Lu (present-day Shandong [Shantung] Province) of the noble K'ung clan. His original name was K'ung Ch'iu. His father was a commander of a district in Lu. He died three years after Confucius was born, leaving the family in poverty; nevertheless Confucius received a fine education. He was married at the age of 19 and borne one son and two daughters. During the four years after his marriage, poverty forced him to work for the chief of the district in which he lived. His career as a teacher started after his mother died in 527 BC. He traveled about and instructed a small body of disciples that gathered around him. His reputation as a man of learning and character and his respect for Chinese ideals soon spread through the territory of Lu. His teachings covered the virtue in



life such as 1) benevolence, 2) righteousness, 3) propriety, 4) wisdom, and 5) loyalty. His favorite saying was the form of the Golden Rule which was "What you do not want done to you, do not do to others."

**Lao Tzu.** (570?-490? BC) He was a Chinese philosopher and known as the founder of Taoism. His birthplace was the province of Henan (Ho-nan). He worked as a court librarian. Tradition says that he is the author of the *Tao-te Ching* (Classic of the Way and Its Virtue), a philosophical discourse. *Tao-te Ching* is the most translated Chinese literary work. It has a great influence on Chinese thought and culture. It teaches that man can find lasting happiness if he follows "the way of virtue" (*tao*). The "tao" is actualized by way of recognition and acceptance of nothingness, that is, wisdom is being aware that weakness actually equals strength, that happiness depends on disaster, and that passivity is the excellent action.

**Mencius.** (circa 371 c. 288 BC) Also known as Mengtse, he was the greatest student of Confucius. He was born in Chao (now in Shandong Province). After learning the philosophy of Confucius, he traveled for years explaining Confucianism and teaching rulers on their duties toward their subjects. He taught that the power to govern comes from God and should be done in the interests of the common people. He believed that war was a crime and should only be done for purposes of defense. According to tradition, Mencius spent the latter part of his life alone with his disciples. His teachings stressed that people are by nature good, but that this goodness becomes manifest only when they experience peace of mind, which comes from material security. He taught that the people have the right to overthrow a crooked government by way of revolution. He said that, "He who gains the hearts of the people gains the throne, but he who loses the people's hearts loses the throne."



#### Fill in the blanks.

1. According to tradition the \_\_\_\_\_ was the first hereditary Chinese dynasty.
2. The \_\_\_\_\_ is the earliest dynasty, which has reliable \_\_\_\_\_ evidence.
3. The Shang was an elite \_\_\_\_\_ wherein the king presided over a military \_\_\_\_\_.
4. Shang people worshiped many gods including their \_\_\_\_\_.
5. The \_\_\_\_\_ dynasty was the \_\_\_\_\_ and the greatest dynasty that ruled China.
6. Under the Shang dynasty, only the \_\_\_\_\_ and talented were appointed as \_\_\_\_\_ ministers.
7. The Zhou dynasty brought about the flowering of \_\_\_\_\_.
8. \_\_\_\_\_ is one of the world's greatest philosophers and China's most beloved teachers.
9. Confucius teachings covered the virtue in life such as \_\_\_\_\_, righteousness, propriety, wisdom, and \_\_\_\_\_.
10. Lao Tzu was a Chinese philosopher and known as the founder of \_\_\_\_\_.
11. Mencius, also known as \_\_\_\_\_ was the greatest \_\_\_\_\_ of Confucius.
12. Mencius believed that war was a \_\_\_\_\_ and that warfare should only be done for purposes of \_\_\_\_\_.

#### Identify the person who said this.

- \_\_\_\_\_ 13. "He who gains the hearts of the people gains the throne, but he who loses the people's hearts loses the throne."
- \_\_\_\_\_ 14. Man can find lasting happiness if he follows "the way of virtue" (*tao*).
- \_\_\_\_\_ 15. "What you do not want done to you, do not do to others."

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